# Hotwire 6210-A2, 6211-A2, and 6381-A2

## User's Guide

**Document Number 6210-A2-GB21-10**

April 2004

PARADYNE®

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### Important Safety Instructions

**1.** Read and follow all warning notices and instructions marked on the product or included in the manual.

**2.** Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these slots and openings must not be blocked or covered.

**3.** Do not allow anything to rest on the power cord and do not locate the product where persons will walk on the power cord.

**4.** Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous high voltage points or other risks. Refer all servicing to qualified service personnel.

**5.** General purpose cables are used with this product for connection to the network. Special cables, which may be required by the regulatory inspection authority for the installation site, are the responsibility of the customer. Use a UL Listed, CSA certified, minimum No. 24 AWG line cord for connection to the Digital Subscriber Line (DSL) network.

**6.** When installed in the final configuration, the product must comply with the applicable Safety Standards and regulatory requirements of the country in which it is installed. If necessary, consult with the appropriate regulatory agencies and inspection authorities to ensure compliance.

**7.** A rare phenomenon can create a voltage potential between the earth grounds of two or more buildings. If products installed in separate buildings are **interconnecte**d, the voltage potential may cause a hazardous condition. Consult a qualified electrical consultant to determine whether or not this phenomenon exists and, if necessary, implement corrective action prior to interconnecting the products.

**8.** Input power to this product must be provided by one of the following: (1) a UL Listed/CSA certified power source with a Class 2 or Limited Power Source (LPS) output for use in North America, or (2) a certified transformer, with a Safety Extra Low Voltage (SELV) output having a maximum of 240 VA available, for use in the country of installation.

**9.** In addition, since the equipment is to be used with telecommunications circuits, take the following precautions:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
- Do not use the telephone to report a gas leak in the vicinity of the leak.

### CE Marking

When the product is marked with the CE mark on the equipment label, a supporting Declaration of Conformity may be downloaded from the Paradyne World Wide Web site at **www.paradyne.co**m. Select *Support -> Technical Manuals -> Declarations of Conformity.*

## FCC Part 15 Declaration

An FCC Declaration of Conformity may be downloaded from the Paradyne World Wide Web site at **www.paradyne.co**m. Select *Support -> Technical Manuals -> Declarations of Conformity.*

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The authority to operate this equipment is conditioned by the requirement that no modifications will be made to the equipment unless the changes or modifications are expressly approved by the responsible party.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## Notice to Users of the United States Telephone Network

The following notice applies to versions of the modem that have been FCC Part 68 approved.

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the Administrative Council for Terminal Attachment (ACTA). On the bottom side of this equipment is a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, this number must be provided to the Telephone Company.

This equipment is intended to connect to the Public Switched Telephone Network through a Universal Service Order Code (USOC) type RJ11C jack. A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It has been designed to be connected to a compatible modular jack that is also compliant.

The Ringer Equivalence Number (or REN) is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local Telephone Company. The REN for this product is part of the product identifier that has the format US:AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point. For example, 03 represents a REN of 0.3.

If the modem causes harm to the telephone network, the Telephone Company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the Telephone Company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The Telephone Company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens, the Telephone Company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service. If trouble is experienced with the modem, refer to the repair and warranty information in this document.

If the equipment is causing harm to the telephone network, the Telephone Company may request that you disconnect the equipment until the problem is resolved.

The user may make no repairs to the equipment.

Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.

If the site has specially wired alarm equipment connected to the telephone line, ensure the installation of the modem does not disable the alarm equipment. If you have questions about what will disable alarm equipment, consult your Telephone Company or a qualified installer.

## Supplier's Declaration of Conformity

Place of Issue: Paradyne Corporation
8545 126th Avenue North
Largo, FL 33773-1502
USA

Date of Issue: 4/2/2004

Paradyne Corporation, located at the above address, hereby certifies that the Hotwire® Model Number 6381-A2-210, 6210-A2-200, and 6211-A2-200 bearing labeling identification number US:AW2DL03B6381-AX complies with: the Federal Communications Commission's ("FCC") Rules and Regulations 47 CFR Part 68, the Administrative Council on Terminal Attachments ("ACTA")-adopted technical criteria TIA-968-A, "Telecommunications – Telephone Terminal Equipment –Technical Requirements for Connection of Terminal Equipment To the Telephone Network, October 2002."

Patrick Murphy

Senior Vice President, Chief Financial Officer

## Notice to Users of the Canadian Telephone Network

**NOTICE:** This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation IC before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

**NOTICE:** The Ringer Equivalence Number (REN) for this terminal equipment is labeled on the equipment. The REN assigned to each terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

If your equipment is in need of repair, contact your local sales representative, service representative, or distributor directly.

## CANADA – EMI NOTICE:

This Class B digital apparatus meets all requirements of the Canadian interference-causing equipment regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du règlement sur le matérial brouilleur du Canada.

## Japan Notices

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取扱説明書に従って正しい取り扱いをして下さい。

This is a Class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

**Table of Contents**


1 Introduction ..... 8

1.1 Models ..... 8
1.2 Features & System Requirements ..... 8

2 Your Modem at a Glance ..... 9

2.1 Ports and buttons (Back panel) ..... 9
2.2 LED description (Front panel) ..... 10
2.3 Packing List ..... 10

3 Getting Started ..... 11

3.1 Connecting the Hardware ..... 11
3.2 Configuring Your PC ..... 13

4 Using the Web Interface ..... 21

4.1 Log Into Your Modem ..... 21
4.2 Home screen ..... 22
4.3 Setup ..... 23
4.4 Configuring the WAN ..... 24
4.5 Configuring the LAN ..... 30
4.6 Advanced ..... 33
4.7 Tools ..... 39
4.8 Status ..... 42

5 Troubleshooting ..... 44

5.1 The modem is not functional ..... 44
5.2 I can't connect to the modem. ..... 44
5.3 The LEDs blink in a sequential pattern. ..... 44
5.4 The DSL Link LED continues to blink but does not go solid ..... 44
5.5 The DSL Link LED is always off ..... 45

6 Terminology ..... 46

# 1 Introduction

Congratulations on becoming the owner of a Paradyne modem.

## 1.1 Models

This manual describes three models:

- Model 6210 – is set in the factory to run in bridge mode. It does not have any router functions. It supports ADSL.
- Model 6211 – is set in the factory to run in router mode. It supports ADSL.
- Model 6381 – may be set by you to run in bridge or router mode. It supports ADSL/R.

**Definition**

*A **bridge** is a device that forwards any message from one part of a network to another. The Model 6210 is a bridge.*

*A **router** is a device that forwards messages according to their network addresses. The Model 6211 is a router.*

***ADSL** is Asymmetric Digital Subscriber Line, a version of DSL that allows a higher speed for information coming from the Internet to your PC ("downstream") than it does for information going to the Internet from your PC ("upstream").*

***ADSL/R** is technology that combines ADSL and ReachDSL in one device.*

***ReachDSL** is a version of DSL that works on lines too long or too noisy for ADSL.*

## 1.2 Features & System Requirements

- Features
  - 10/100BaseT Ethernet port
  - USB port
  - Connects multiple PCs to the Internet with just one WAN IP Address (when configured in router mode with NAT enabled)
  - Configurable through user-friendly web interface
  - Supports single-session IPSec and PPTP passthrough for Virtual Private Network (VPN)
  - Several popular games are already pre-configured. Just enable the game and the port settings are automatically configured.
  - Configurable as a DHCP Server on your network
  - Compatible with virtually all standard Internet applications

- Address filtering and DMZ hosting
- Simple web based status page displays a snapshot of your system configuration, and links to the configuration pages
- Downloadable flash software upgrades
- Support for up to 8 Permanent Virtual Circuits (PVCs)
- Support for up to 2 PPPoE sessions

- System Requirements

In order to use your modem for Internet access, you must have the following:

- ADSL service subscription from your ISP.
- One computer with an Ethernet 10BaseT/100BaseT network interface card (NIC) or a free USB port.
- (Optional) An Ethernet hub or switch, if you are connecting the device to several computers on an Ethernet network.
- For system monitoring or configuration using the supplied web interface: a web browser such as Internet Explorer Version 5.5 or later.

# 2 Your Modem at a Glance

## 2.1 Ports and buttons (Back panel)

- **POWER** is where you connect the power supply.
- **RESET Button:** The RESET button is used to reset the modem to factory default settings. Do not use the RESET button unless advised to by your service representative.
- **LAN (Local Area Network) port:** This is used to connect to Ethernet network devices, such as a PC, hub, switch, or router.
- **USB (Universal Serial Bus port):** Connects to a PC's serial port. The modem supports Windows-based PCs using an RNDIS driver (included on the CD).
- **PHONE port:** This allows a phone to directly connect to the modem. You do not need to add splitter to the phone you connect here, since the modem has an internal splitter.
- **LINE port:** This is the DSL interface which connects directly to your phone line.

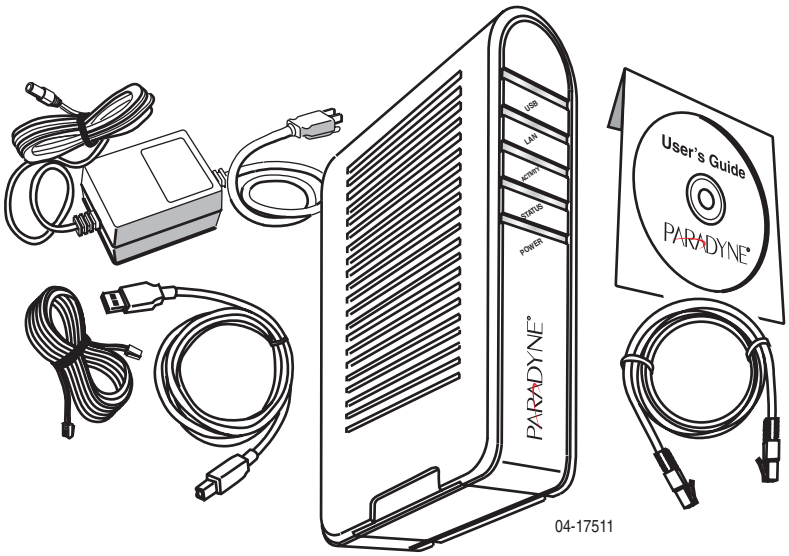
## 2.2 LED description (Front panel)

- **Power LED:** On indicates that the power is supplied to the modem.
- **Status LED**: The Status LED serves two purposes. If the LED is continuously lit, the DSL interface is successfully connected to a device through the LINE port. If the LED is flickering, it is an indication that the modem is training (negotiating the connection to its partner modem).
- **Activity LED:** The Activity LED is off (or yellow) if no PPPoE connection is established or the connection is not used. When the Status LED is green, a PPPoE connection is established.
- **LAN LED:** The LAN LED serves two purposes. If the LED is continuously lit, the Ethernet interface is successfully connected to a device through the LAN port. If the LED is flickering, it is an indication of any network activity.
- **USB LED:** The USB LED serves two purposes. If the LED is continuously lit, the USB interface is successfully connected to a device through the LAN port. If the LED is flickering, it is an indication of any network activity.

## 2.3 Packing List

Your modem is shipped with the following:

- Power adapter
- Ethernet cable (RJ45, straight-through wiring)
- Phone cable (RJ11)
- USB cable
- CD-ROM containing this manual and USB drivers



# 3 Getting Started

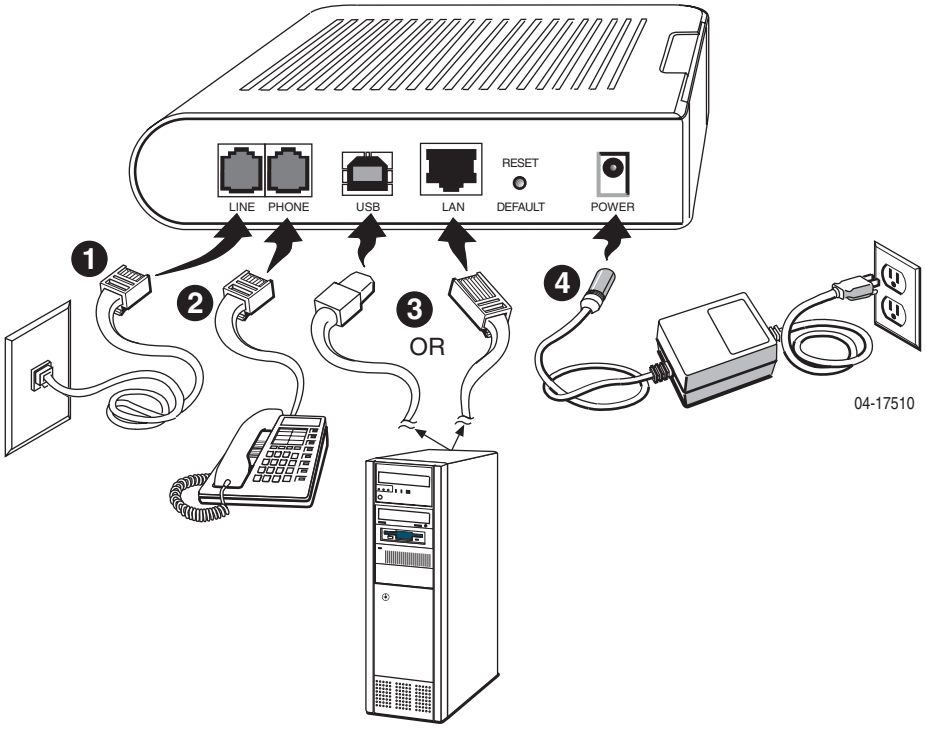
This chapter provides basic instructions for connecting the modem to a computer or a LAN and to the Internet using DSL.

- Part 1 provides instructions to set up the hardware.
- Part 2 describes how to configure Internet properties on your computer.

It is assumed that you have already subscribed to DSL service with your telephone company or other Internet service provider (ISP). These instructions provide a basic configuration that should be compatible with your home or small office network setup. Refer to Chapter 4 for modem configuration instructions.

## 3.1 Connecting the Hardware

Shut down your PC before connecting the modem.



### 3.1.1 Cable Connections

#### Step 1. Connect the LINE Port

Connect the supplied modular phone cable to the LINE port, and connect the other end of the cable to your phone jack.

#### Step 2. Connect the PHONE Port

If you would like to use a phone in the vicinity of the modem, connect it to the PHONE jack of the modem using the cord that came with your telephone. The modem has an internal POTS filter, so you don't need to install one here.

#### Step 3. Connect the USB Port or the LAN Port

If you are connecting the modem directly to a PC (rather than to a LAN), you can use either the USB port or the LAN port. (Do not connect both the USB port and the LAN port to the same PC.)

**Using the USB Port**

To use the USB port, connect the supplied USB cable to the USB port of the modem, then connect the other end of the cable to a free USB port on your PC.

When you start your PC (in a later step), Windows will detect the new hardware and initiate the Found New Hardware Wizard. Follow the instructions in Section 3.2.1.

**Using the LAN Port**

You can use the included Ethernet cable to connect your computer directly to the modem. Attach one end of the supplied Ethernet cable to the LAN port and connect the other end to the 10/100BaseT port on the network interface card in your PC.

If your LAN has more than one computer, you can attach one end of an Ethernet cable to a hub or a switch and the other to the port labeled LAN on the modem. This probably will require an Ethernet crossover cable. See the documentation for your hub or switch.

#### Step 4. Attach the Power Adapter

The supplied power adapter may look different than the one illustrated here.

Connect the cylindrical power plug into the POWER connector on the back of the device.

- If you have a wall-mount adapter, plug the AC adapter into a wall outlet or a power strip.
- If you have a table-top adapter, use the AC power cord to connect the adapter to a wall outlet or power strip.

### 3.1.2 Turn on Your PC

Turn on your PC any other LAN devices, such as hubs or switches.

## 3.2 Configuring Your PC

Before you start to access the modem via Ethernet, you must configure your PC's TCP/IP address to be **192.168.1.*x***, where ***x*** is any number between 3 and 254. The subnet mask must be **255.255.255.0**. Your modem's default IP address is **192.168.1.1**.

If you used the Ethernet cable to connect your modem and PC, you don't need any specific driver installation and you can skip Section 3.2.1. If you used the USB cable on a PC running a Windows operation system, install the provided USB driver.

Windows 95 and Windows NT 4.0 do not support USB without additional software (not included with your modem). If USB driver installation fails under those operating systems, contact your service provider.

### 3.2.1 Windows® USB Driver Installation

As soon as you connect the USB cable between your PC and the modem, Windows will detect new hardware and the Found New HardwareWizard will pop up.

A. Choose "**Install from a list or specific location**" and click on **Next** (Figure 3.1).

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
USB Device
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

***Figure 3.1. Found New Hardware Wizard***

B. Insert the supplied CD and use **Browse** to include the location D:\drivers in the search, where D: is the letter you use for your CD drive (Figure 3.2 and Figure 3.3).

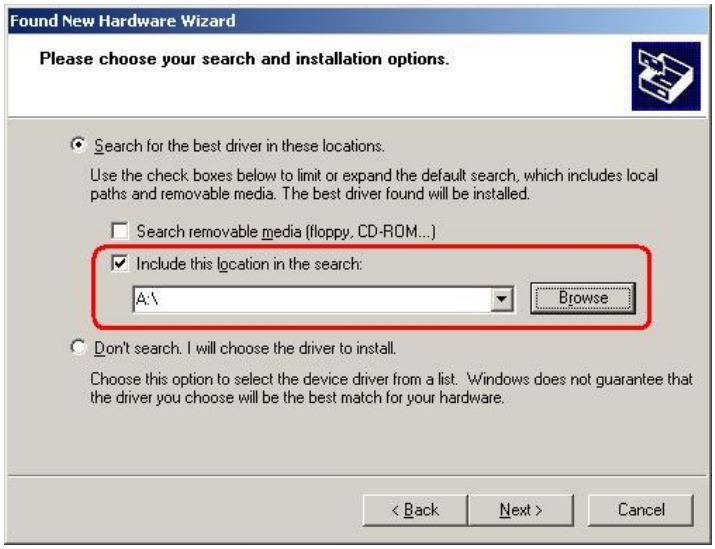

Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
A:\
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

***Figure 3.2. New Hardware Installation Options***

***Figure 3.3. Browse for Folder***

C. The Wizard will ask you to confirm the hardware installation. Choose **Continue Anyway**. Windows will then install the supplied USB driver on your PC (Figure 3.4 and Figure 3.5).

Hardware Installation
The software you are installing for this hardware:
Broadcom USB Remote NDIS Device
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

***Figure 3.4. Hardware Installation Confirmation***

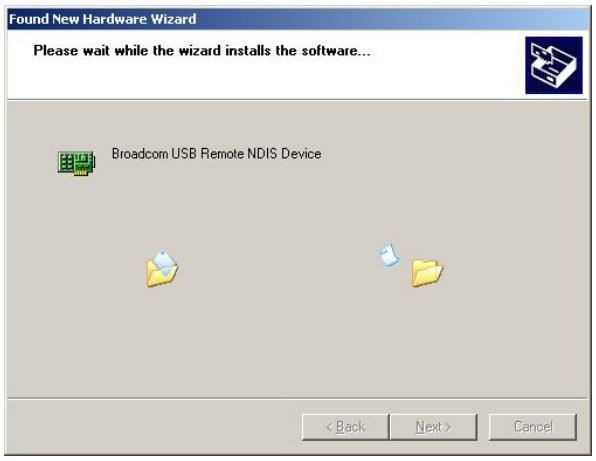



*Figure 3.5. Hardware Installation*

D. Click on **Finish** to close the Wizard at the completion page (Figure 3.6).

Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
Broadcom USB Remote NDIS Device
Click Finish to close the wizard.
< Back
Finish
Cancel

*Figure 3.6. Completing the Found New Hardware Wizard*

Before you start to access the modem using the Ethernet or USB connection, you must configure your PC's TCP/IP address to be **192.168.1.*x***, where *x* is any number between 3 and 254. The subnet mask is **255.255.255.0**.

Your modem's default IP address is **192.168.1.1**.

### 3.2.2 Windows XP:

1. In the Windows task bar, click on the **Start** button, and then click on **Control Panel**.
2. Double-click on the **Network Connections** icon.
3. In the LAN or High-Speed Internet window, right-click on the icon corresponding to your network interface card (NIC) and select **Properties**. (Often this icon is labeled *Local Area Connection*). The **Local Area Connection** dialog box is displayed with a list of currently installed network items.

4. Ensure that the check box to the left of the item labeled **Internet Protocol (TCP/IP)** is checked, and click on Properties .

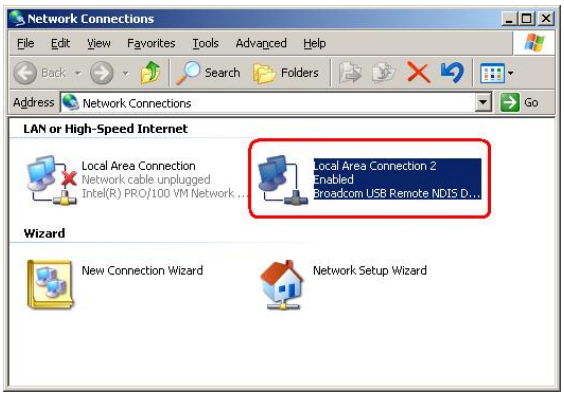



***Figure 3.7. Network Connections in Windows XP***

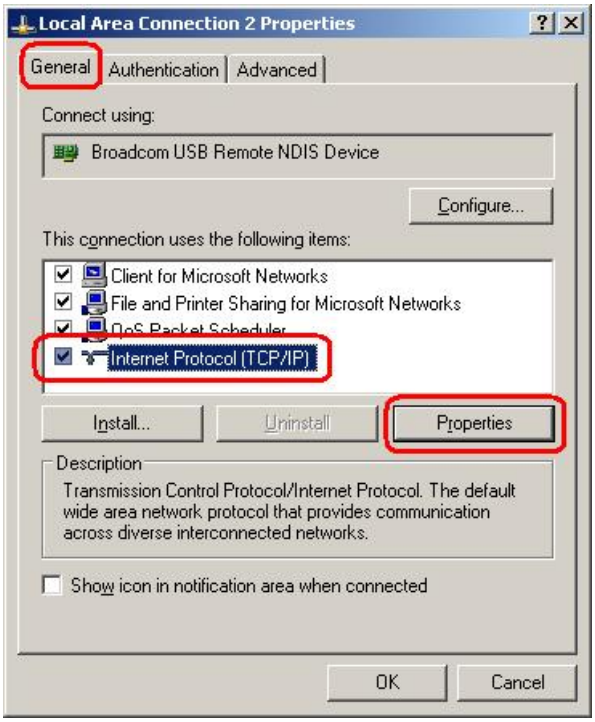



***Figure 3.8. Local Area Connection Properties in Windows XP***

5. In the **Internet Protocol (TCP/IP) Properties** dialog box, click in the radio button labeled **Use the following IP address** and type **192.168.1.*x*** (where ***x*** is any number between 3 and 254) in the IP Address field. Type **255.255.255.0** in the Subnet Mask field.

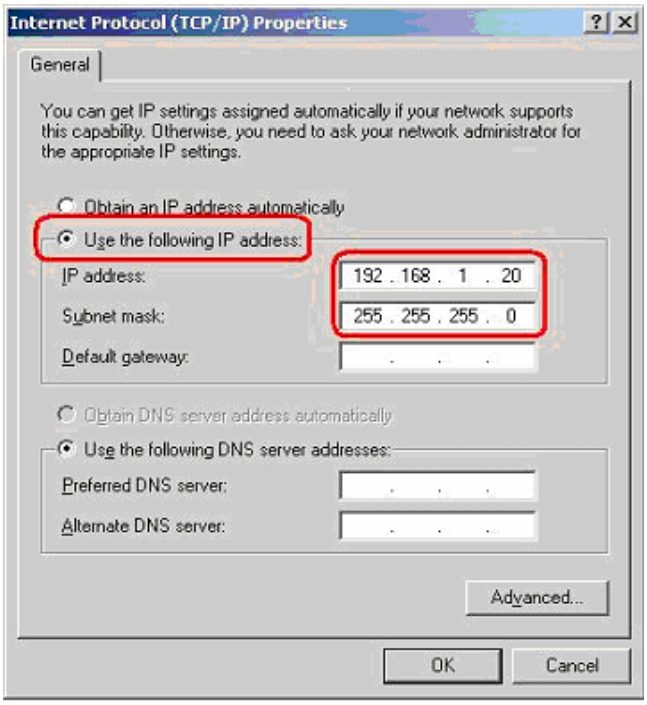

Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 1 . 20
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

***Figure 3.9. TCP/IP Properties in Windows XP***

6. Click on OK twice to confirm your changes, and close the **Control Panel**.

### 3.2.3 Windows 2000:

1. In the Windows task bar, click on the **Start** button, point to **Settings**, and then select **Control Panel**.
2. Double-click on the **Network and Dial-up Connections** icon.
3. In the **Network and Dial-up Connections** window, right-click on the **Local Area Connection** icon, and then select **Properties**.

   The **Local Area Connection Properties** dialog box is displayed with a list of currently installed network components. If the list includes **Internet Protocol (TCP/IP)**, the protocol has already been enabled, in which case you can skip to Step 10.
4. If **Internet Protocol (TCP/IP)** does not appear as an installed component, click on Install...
5. In the **Select Network Component Type** dialog box, select **Protocol**, and then click on Add...
6. Select **Internet Protocol (TCP/IP)** in the **Network Protocols** list, and then click on OK.

   You may be prompted to install files from your Windows 2000 installation CD or other media. Follow the instructions to install the files.
7. If prompted, click on OK to restart your computer with the new settings.
8. After restarting your PC, double-click on the **Network and Dial-up Connections** icon in the **Control Panel**.
9. In **Network and Dial-up Connections** window, right-click on the **Local Area Connection** icon, and then select **Properties**.
10. In the **Local Area Connection Properties** dialog box, select **Internet Protocol (TCP/IP)**, and then click on Properties.

11. In the **Internet Protocol (TCP/IP) Properties** dialog box, click in the radio button labeled **Use the following IP address** and type **192.168.1.*x*** (where ***x*** is any number between 3 and 254) in the IP Address field. Type **255.255.255.0** in the Subnet Mask field.
12. Click on OK twice to confirm and save your changes, and then close the **Control Panel**.

### 3.2.4 Windows Me:

1. In the Windows task bar, click on the **Start** button, point to **Settings**, and then click on **Control Panel**.
2. Double-click on the **Network and Dial-up Connections** icon.
3. In the **Network and Dial-up Connections** window, right-click on the **Network** icon, and then select **Properties**.

   The **Network Properties** dialog box is displayed with a list of currently installed network components. If the list includes **Internet Protocol (TCP/IP)**, the protocol has already been enabled, in which case you can skip to Step 11.
4. If **Internet Protocol (TCP/IP)** does not appear as an installed component, click on Add...
5. In the **Select Network Component Type** dialog box, select **Protocol**, and then click on Add...
6. Select **Microsoft** in the Manufacturers box.
7. Select **Internet Protocol (TCP/IP)** in the Network Protocols list, and then click on OK.

   You may be prompted to install files from your Windows Me installation CD or other media. Follow the instructions to install the files.
8. If prompted, click on OK to restart your computer with the new settings.
9. After restarting your PC, double-click on the **Network and Dial-up Connections** icon in the **Control Panel**.
10. In **Network and Dial-up Connections** window, right-click on the **Network** icon, and then select **Properties**.
11. In the **Network Properties** dialog box, select **TCP/IP**, and then click on Properties.
12. In the **TCP/IP Settings** dialog box, click in the radio button labeled **Use the following IP address** and type **192.168.1.*x*** (where ***x*** is any number between 3 and 254) in the IP Address field. Type **255.255.255.0** in the Subnet Mask field.
13. Click on OK twice to confirm and save your changes, and then close the **Control Panel**.

### 3.2.5 Windows 95, 98:

1. In the Windows task bar, click on the **Start** button, point to **Settings**, and then click on **Control Panel**.
2. Double-click on the **Network** icon.

   The **Network** dialog box is displayed with a list of currently installed network components. If the list includes **TCP/IP**, the protocol has already been enabled, in which case you can skip to Step 9.
3. If **TCP/IP** does not appear as an installed component, click on Add.... The **Select Network Component Type** dialog box appears.
4. Select **Protocol**, and then click Add....

   The **Select Network Protocol** dialog box appears.

5. Click on **Microsoft** in the Manufacturers list box, and then click **TCP/IP** in the Network Protocols list box.
6. Click OK to return to the **Network** dialog box, and then click OK again.

   You may be prompted to install files from your Windows 95/98 installation CD. Follow the instructions to install the files.
7. Click on OK to restart the PC and complete the TCP/IP installation.
8. After restarting your PC, open the **Control Panel** window, and then click on the **Network** icon.
9. Select the network component labeled **TCP/IP**, and then click on Properties.

   If you have multiple TCP/IP listings, select the listing associated with your network card or adapter.
10. In the **TCP/IP Properties** dialog box, click on the **IP Address** tab.
11. Click in the radio button labeled **Use the following IP address** and type **192.168.1.*x*** (where ***x*** is any number between 3 and 254) in the IP Address field. Type **255.255.255.0** in the Subnet Mask field.
12. Click on OK twice to confirm and save your changes. You will be prompted to restart Windows. Click on Yes and restart your PC again.

### 3.2.6 Windows NT 4.0:

1. In the Windows NT task bar, click on the **Start** button, point to **Settings**, and then click on **Control Panel**.
2. In the **Control Panel** window, double click on the **Network** icon.
3. In the **Network** dialog box, click on the **Protocols** tab.

   The Protocols tab displays a list of currently installed network protocols. If the list includes **TCP/IP**, the protocol has already been enabled, in which case you can skip to Step 9.
4. If **TCP/IP** does not appear as an installed component, click on Add...
5. In the **Select Network Protocol** dialog box, select **TCP/IP**, and then click on OK.

   You may be prompted to install files from your Windows NT installation CD or other media. Follow the instructions to install the files.

   After all files are installed, a window displays to inform you that a TCP/IP service called DHCP can be set up to dynamically assign IP information.
6. Click on Yes to continue, and then click on OK if prompted to restart your computer.
7. After restarting your PC, open the **Control Panel** window, and then double-click on the **Network** icon.
8. In the **Network** dialog box, click on the **Protocols** tab.
9. In the **Protocols** tab, select **TCP/IP**, and then click on Properties.
10. In the **Microsoft TCP/IP Properties** dialog box, click in the radio button labeled **Use the following IP address** and type **192.168.1.*x*** (where ***x*** is any number between 3 and 254) in the IP Address field. Type **255.255.255.0** in the Subnet Mask field.
11. Click on OK twice to confirm and save your changes, and then close the **Control Panel**.

### 3.2.7 Assigning IP to your PC automatically by DHCP

To use the CPE's DHCP feature (only available on Models 6211 and 6381), click in the radio button labeled **Obtain an IP address automatically** instead of **Use the following IP address** in the above procedures.

- By default, the LAN port IP address of the CPE is **192.168.1.1**. (You can change this address, or another address can be assigned by your ISP.)

Now that the hardware installation is complete, proceed to **Chapter 4: Using the Web Interface**

# 4 Using the Web Interface

This section will guide you through your modem's configuration, and other uses of the web interface.

- The 6210 modem is a bridge. Not all screens shown in this section are available on the 6210.
- The 6211 modem is shipped as a router.
- The 6381 modem is shipped with a standard default bridge configuration. It can be changed from a bridge to a router.

## 4.1 Log Into Your Modem

To configure your modem, open your web browser. Ignore any error about lacking a connection. Type the default IP address (**192.168.1.1**) into the Location field of your browser and press the **Enter** key. The following screen appears. The default user name is **Admin** (case sensitive) and the password is **Admin** (case sensitive).

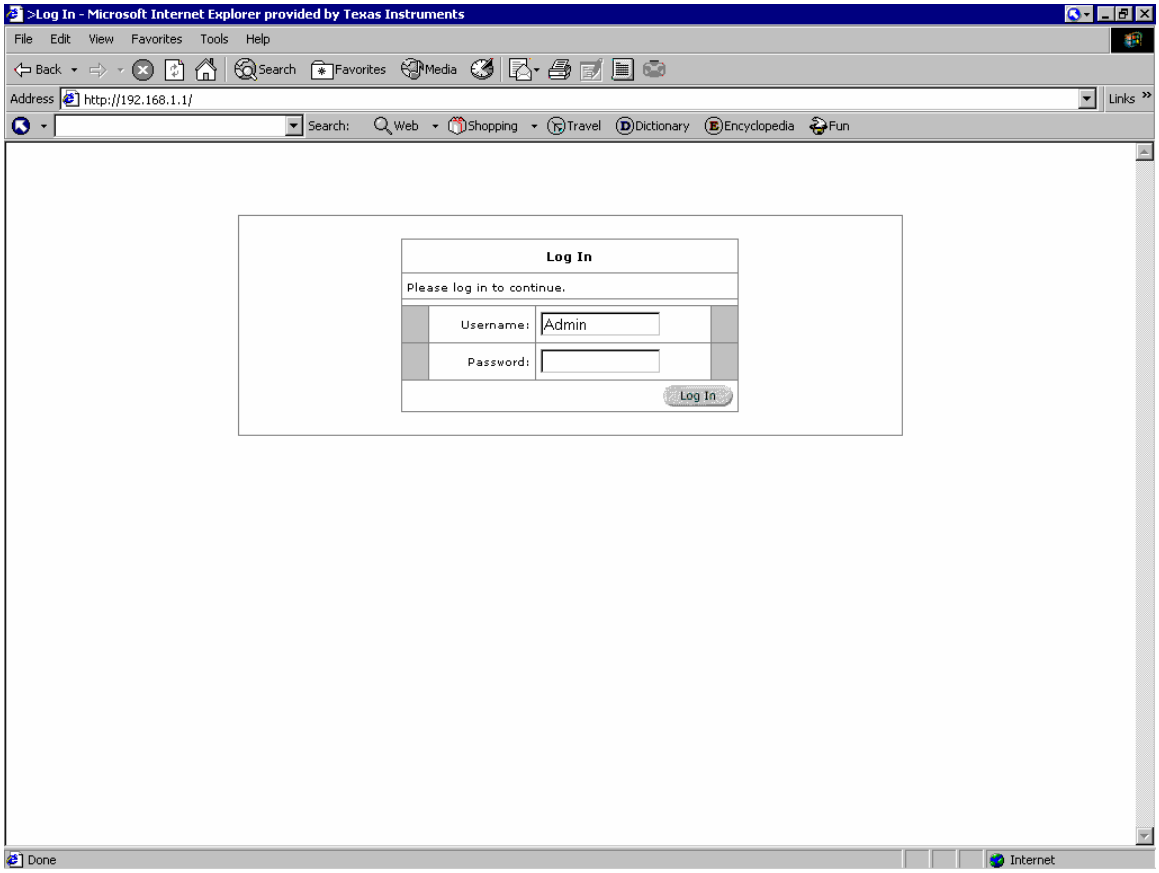



***Figure 4-1. Login Screen***

Note: Before configuring your modem, make sure you have followed the instructions in Chapter 3. You should have your PCs configured for DHCP mode (if your modem will be), and have proxies disabled on your browser. If you see a login redirection screen when you access the web interface, verify that JavaScript support is enabled in your browser. Also, if you do not get the screen shown in Figure 4-1, you may need to delete your temporary Internet files.

## 4.2 Home screen

The first screen (Figure 4-2) that appears after the log in screen is the Home screen. From this screen you can configure the LAN and WAN connections, configure the modem's security, routing, and filtering, access debugging tools, obtain the status of the modem, and view the online help.

The basic layout of the Home page consists of a page selection list across the top of the browser window. The footer displays modem status, connection information, and other useful information. The center display is where most of the configuration will take place.

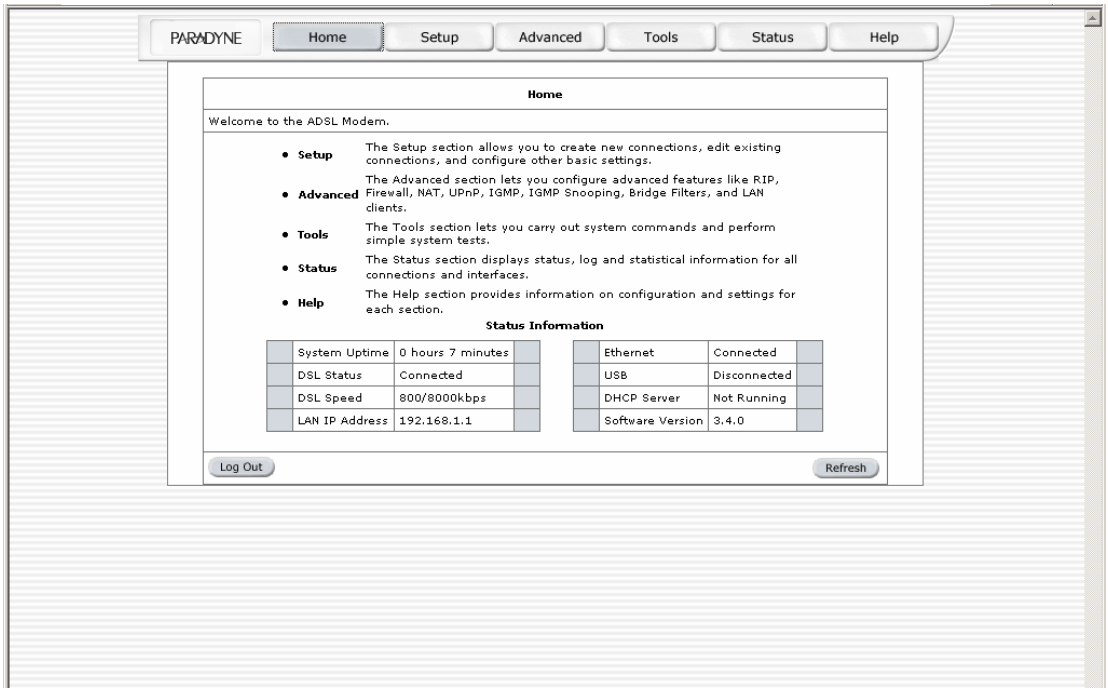



***Figure 4-2. Home Page***

## 4.3 Setup

To set up your modem with a basic configuration, from the Home page, select Setup. Figure 4-3 illustrates the Setup page. The page is broken into two subsections: the WAN configuration and the LAN configuration.

Before configuring the router, there are several concepts that you should be familiar with on how your new router works. Please take a moment to familiarize yourself with these concepts, as it makes the configuration easier.

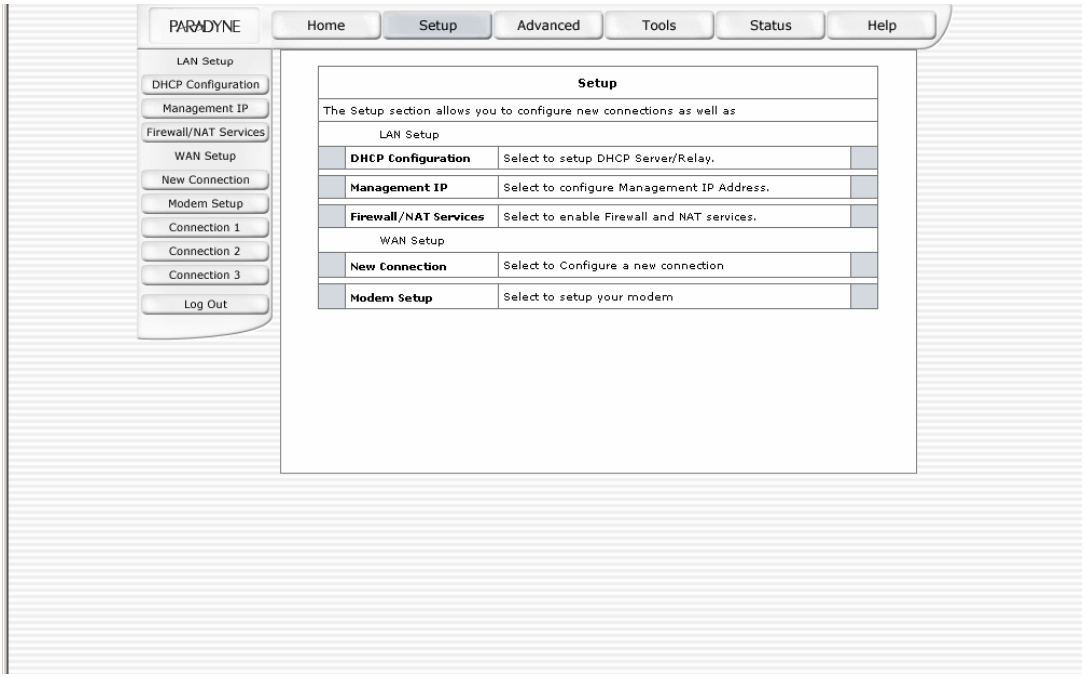



***Figure 4.3. Setup Page***

### 4.3.1 Wide Area Network connection

The DSL (LINE) connection is the Wide Area Network (WAN) connection. It is also referred to as a broadband connection. The requirements for the WAN connection depend on your Internet Service Provider (ISP). Most of the configuration you will perform will be in this area.

### 4.3.2 Local Area Network connection

On the other side of your router are your own Local Area Network (LAN) connections. This is where you plug in your local computers to the router. The router is normally configured to automatically provide all the PCs on your network with Internet addresses.

If connected a PC (rather than a hub or a switch) directly to the modem, your LAN consists of that PC.

### 4.3.3 Saving Changes

Note that the Apply button temporarily saves changes you make. To make changes permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

## 4.4 Configuring the WAN

Before the modem will pass any data between the LAN interface and the WAN interface, the WAN side of the modem must be configured. Depending upon your ISP, you will need some or all of the information outlined below before you can properly configure the WAN:

- Your DSL line Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI)
- Your DSL encapsulation type and multiplexing mode
- Your DSL training mode (default is MMODE)

For **PPPoA** or **PPPoE** users, you also need these values from your ISP:

- Your username and password

For **RFC 1483** users, you may need these values from your ISP:

- Your DSL fixed Internet IP address
- Your subnet mask
- Your default gateway IP address
- Your primary DNS IP address

Since multiple users can use the modem, the modem can simultaneously support multiple connection types. You must set up different profiles for each connection. The modem supports the following protocols:

- DHCP
- PPPoA (RFC 2364)
- PPPoE (RFC 2516)
- Static
- Bridged

.

### 4.4.1 New Connection

A new connection is basically a virtual connection. Your modem can support up to 8 different virtual connections. If you have multiple different virtual connections, you man need to utilize the static and dynamic routing capabilities of the modem to pass data correctly.

#### 4.4.1.1 Bridged Connection

A pure bridged connection does not assign an IP address to the WAN interface. Network Address Translation (NAT) and firewall rules are not enabled. This connection method makes the modem act as a hub that passes packets across the WAN interface to the LAN interface.

To configure the modem as a bridge:

1. From the Home page, click on Setup and then click on New Connection. The default PPPoE connection setup is displayed.
2. At the Type field select Bridge and the Bridge connection setup page is displayed (see Figure 4-4).
3. Give your Bridge connection a unique name; the name must not have spaces and cannot begin with numbers. In this case the unique name is called bridge1.
4. Select the encapsulation type (LLC or VC); if you are not sure which to use, just use the default mode.
5. Select the VPI and VCI settings. (Your DSL service provider or your ISP will supply these.) In this case the DSL service provider is using 0,35.

6. Select the quality of service (QOS). Leave the default value if you are unsure or the ISP did not provide this information.

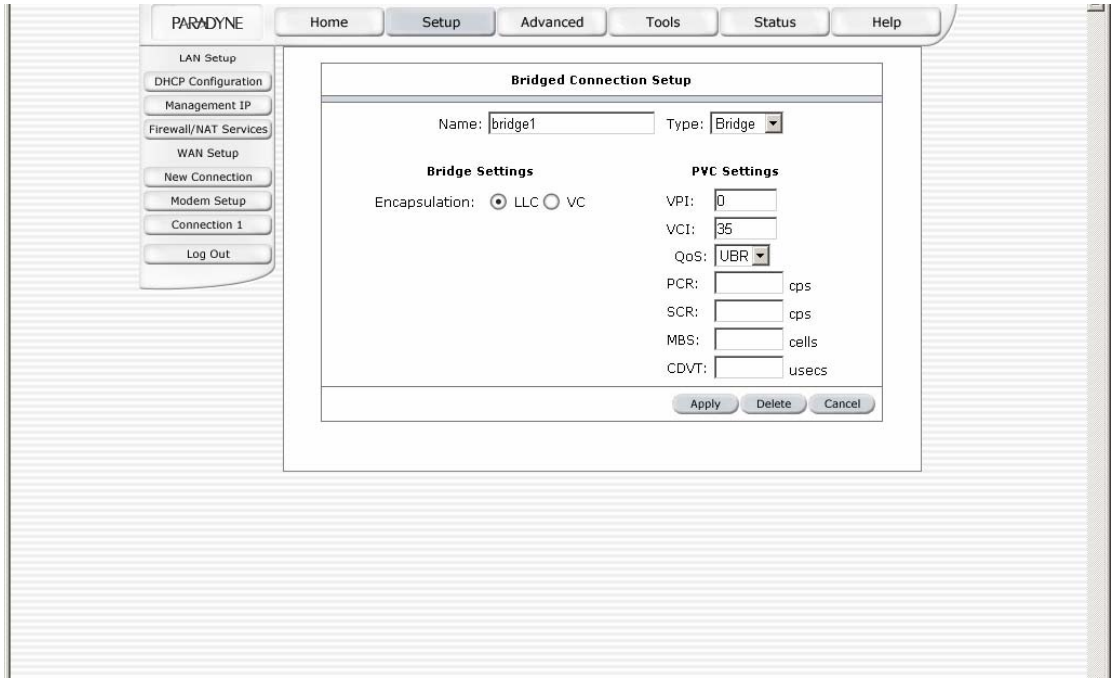



***Figure 4-4. Bridged Connection Setup***

To complete the connection you must now click the Apply button. The Apply button will temporarily save this connection. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

#### 4.4.1.2 PPPoA Connection Setup

PPPoA is defined in the Internet standard RFC 2364. It is a method of encapsulating PPP packets over ATM cells which are carried over the DSL line. PPP (Point-to-Point Protocol) is a method of establishing a network session between network hosts. It usually provides a mechanism of authenticating users. LLC and VC are two different methods of encapsulating the PPP packet. Contact your ISP to make sure which encapsulation is being supported.

By selecting PPPoA, you are forcing your modem to act as the termination point for the PPPoA connection. This frees up your PC resources and allows multiple users to utilize the PPPoA connection.

To configure the modem for PPPoA:

1. Click on Setup and then click on New Connection. The default PPPoE connection setup is displayed.
2. At the Type field select PPPoA and the PPPoA connection setup page is displayed. Figure 4-5 illustrates a typical PPPoA configuration.
3. Give your PPPoA connection a unique name. The name must not have spaces and cannot begin with numbers. In this case the unique name is PPPOA1.
4. Select the encapsulation type (LLC or VC); if you are not sure just use the default mode.
5. Select the VPI and VCI settings; your DSL service provider or your ISP will supply these; in this case the DSL service provider is using 0,40.
6. Select the quality of service (QOS). Leave the default value if your ISP did not provide this information.

Following is a description of the different options:

- **Username –** The username for the PPPoA access. This is provided by your DSL service provider or your ISP.
- **Password –** The password for the PPPoA access. This is provided by your DSL service provider or your ISP.

- **On Demand –** Enables on-demand mode. The connection will disconnect if no activity is detected after the specified idle timeout value.
- **Idle Timeout –** Specifies that PPPoA connection should disconnect if the link has no activity detected for the specified number of seconds. This field is used in conjunction with the On Demand feature. To disable the timeout feature, enter a zero in this field.
- **Keep Alive –** When the On Demand option is not enabled, this value specifies the length of time to keep the connection from being shut down for inactivity by sending PPP LCP echoes to the PPP server. To ensure that the link is always active, enter a zero in this field.
- **MRU** – The Maximum Receive Unit the DSL connection can receive. It is a negotiated value that asks the provider to send packets of no more than this number of bytes. The maximum specified value is 1500, although some DSL/ISP providers require a larger value. The minimum MRU value is 128.
- **Debug** – Enables PPPoA connection debugging facilities. Debugging is talked about later.

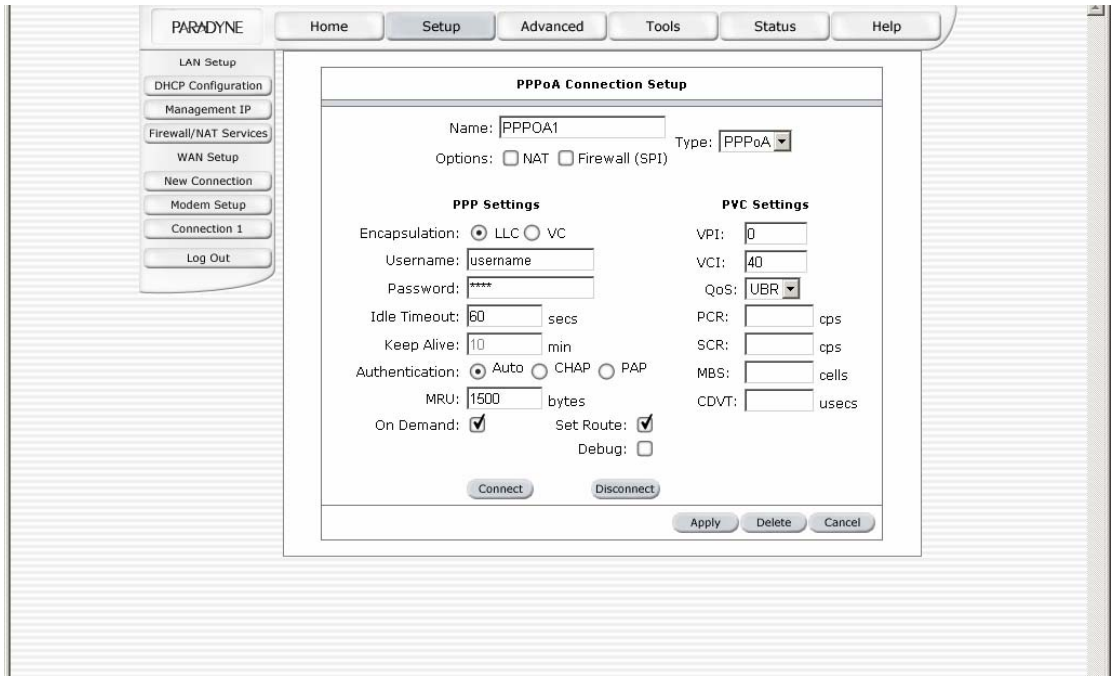



***Figure 4-5. PPPoA Connection Setup***

To complete the connection you must now click the Apply button. The Apply button will temporarily save this connection. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

#### 4.4.1.3 PPPoE Connection Setup

PPPoE is defined in the Internet standard RFC 2516. It is a method of encapsulating PPP packets over Ethernet. PPP (Point-to-Point Protocol) is a method of establishing a network session between network hosts. It usually provides a mechanism of authenticating users.

To configure the CPE for PPPoE

1. Click on Setup and then click on New Connection. The default PPPoE connection setup is displayed.
2. At the Type field, select PPPoE and the PPPoE Connection Setup page is displayed. Figure 4-6 illustrates a typical PPPoE configuration.
3. Give your PPPoE connection a unique name. The name must not have spaces and cannot begin with numbers. In this case the unique name is PPPOE1.

4. Select the encapsulation type (LLC or VC). If you are not sure which to use, just use the default mode.
5. Select the VPI and VCI settings. Your DSL service provider or your ISP will supply these. In this case the DSL service provider is using 0,30.
6. Select the quality of service (QOS). Leave the default value if your ISP did not provide this information.

Following is a description of the different options:

- **Username –** The username for the PPPoA access. This is provided by your DSL service provider or your ISP.
- **Password –** The password for the PPPoA access. This is provided by your DSL service provider or your ISP.
- **On Demand –** Enables on-demand mode. The connection will disconnect if no activity is detected after the specified idle timeout value.
- **Idle Timeout –** Specifies that PPPoA connection should disconnect if the link has no activity detected for the specified number of seconds. This field is used in conjunction with the On Demand feature. To disable the timeout feature, enter a zero in this field.
- **Keep Alive –** When the On Demand option is not enabled, this value specifies the length of time to keep the connection from being shut down for inactivity by sending PPP LCP echoes to the PPP server. To ensure that the link is always active, enter a zero in this field.
- **MRU** – The Maximum Receive Unit the DSL connection can receive. It is a negotiated value that asks the provider to send packets of no more than this number of bytes. The maximum specified value is 1500, although some DSL/ISP providers require a larger value. The minimum MRU value is 128.
- **Enforce MRU –** Check this box if you experience problems accessing the Internet over a PPPoE connection. This feature will force all TCP traffic to conform with PPP MRU by changing TCP Maximum Segment Size to PPP MRU.
- **Debug –** Enables PPPoE connection debugging facilities. Debugging is talked about later.

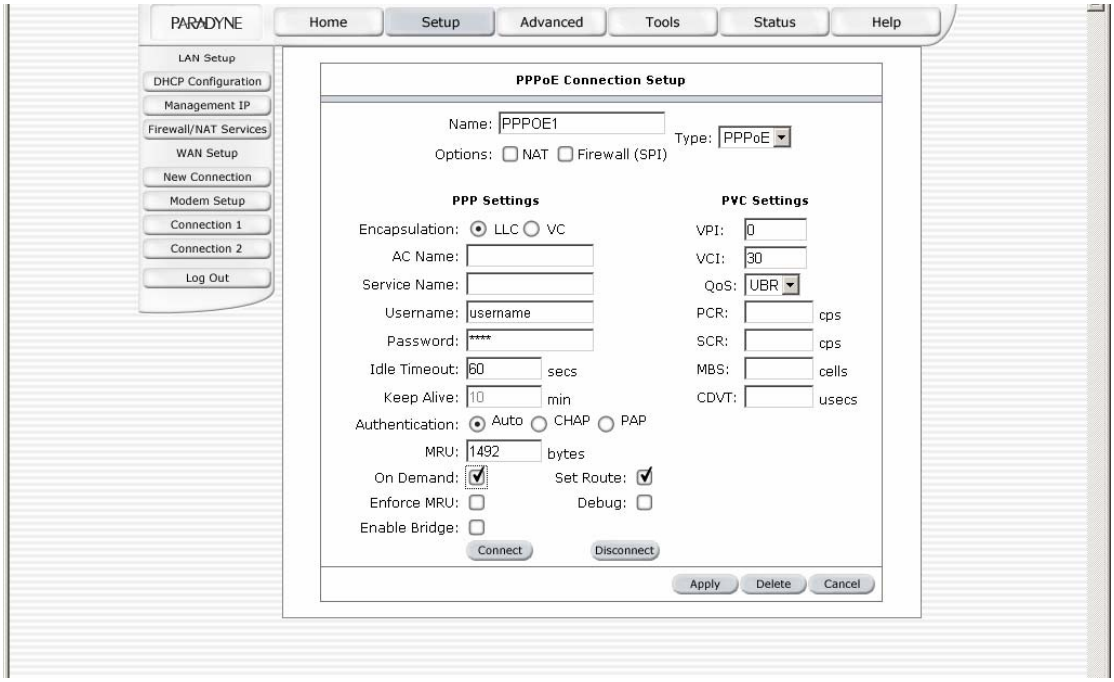



***Figure 4-6. PPPoE Connection Setup***

To complete the connection you must now click the Apply button. The Apply button will temporarily save this connection. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

#### 4.4.1.4 DHCP Connection Setup

Dynamic Host Configuration Protocol (DHCP) allows the modem to automatically obtain the IP address from the server. This option is commonly used in situations where IP is dynamically assigned and is not known prior to assignment.

To configure the modem for a DHCP connection:

1. Click on Setup and then click on New Connection. The default PPPoE connection setup is displayed.
2. At the Type field select DHCP and the DHCP connection setup page is displayed. Figure 4-7 illustrates a typical DHCP configuration.
3. Give your DHCP connection a unique name. The name must not have spaces and cannot begin with numbers. In this case the unique name is DHCP1.
4. Select the encapsulation type (LLC or VC). If you are not sure which to use, just use the default mode.
5. Specify the VPI and VCI settings. Your DSL service provider or your ISP will supply these. In this case the DSL service provider is using 0,35.
6. Select the quality of service (QOS). Leave the default value if your ISP did not provide this information.

If your DSL line is connected and your DSL/IPS provider is supporting DHCP, you can click on the Renew button and the CPE will retrieve an IP Address, Subnet Mask, and Default Gateway address. At any time you can renew the DHCP address by clicking on the Renew button.

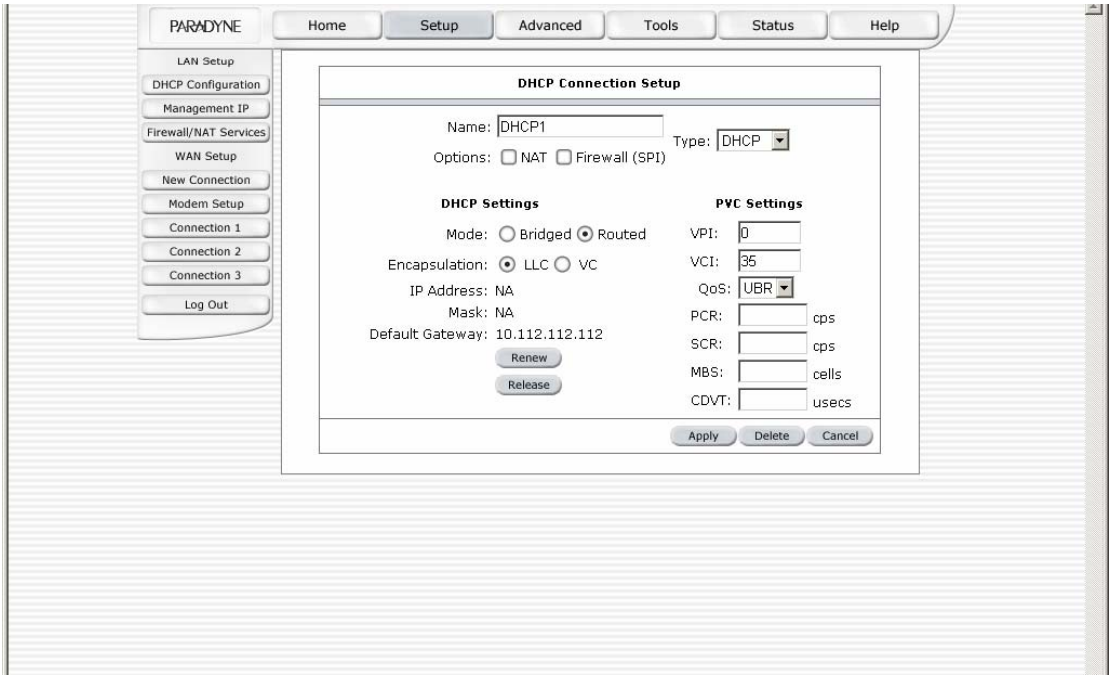



***Figure 4-7. DHCP Connection Setup***

To complete the connection you must now click the Apply button. The Apply button will temporarily save this connection. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

#### 4.4.1.5 Static Connection Setup

A static connection is used whenever a known static IP is assigned. The accompanying information such as the subnet mask and the default gateway should also be specified. Up to three Domain Name Server (DNS) addresses can also be specified. These servers give you access to other web servers. The valid IP addresses range is 1.0.0.0 to 223.255.255.254.

To configure the modem for a Static connection:

1. Click on Setup and then click on New Connection. The default Static connection setup is displayed.
2. At the Type field select Static. The Static Connection Setup page is displayed. Figure 4-8 illustrates a typical Static configuration.
3. Give your Static connection a unique name. The name must not have spaces and cannot begin with numbers. In this case the unique name is STATIC1.
4. Optionally enable Network Address Translation (NAT) and the Firewall options.
5. Select the encapsulation type (LLC or VC). If you are not sure which to use, just use the default mode.
6. Based upon the information your ISP provided, enter your assigned IP Address, Subnet Mask, Default Gateway (if provided), and Domain Name Services (DNS) address (if provided). Specify the VPI and VCI settings. Your DSL service provider or your ISP will supply these. In this case the DSL service provider is using 0,35.
7. Select the quality of service (QOS). Leave the default value if your ISP did not provide this information.
8. Set the mode to Bridged or Routed as instructed by your ISP.

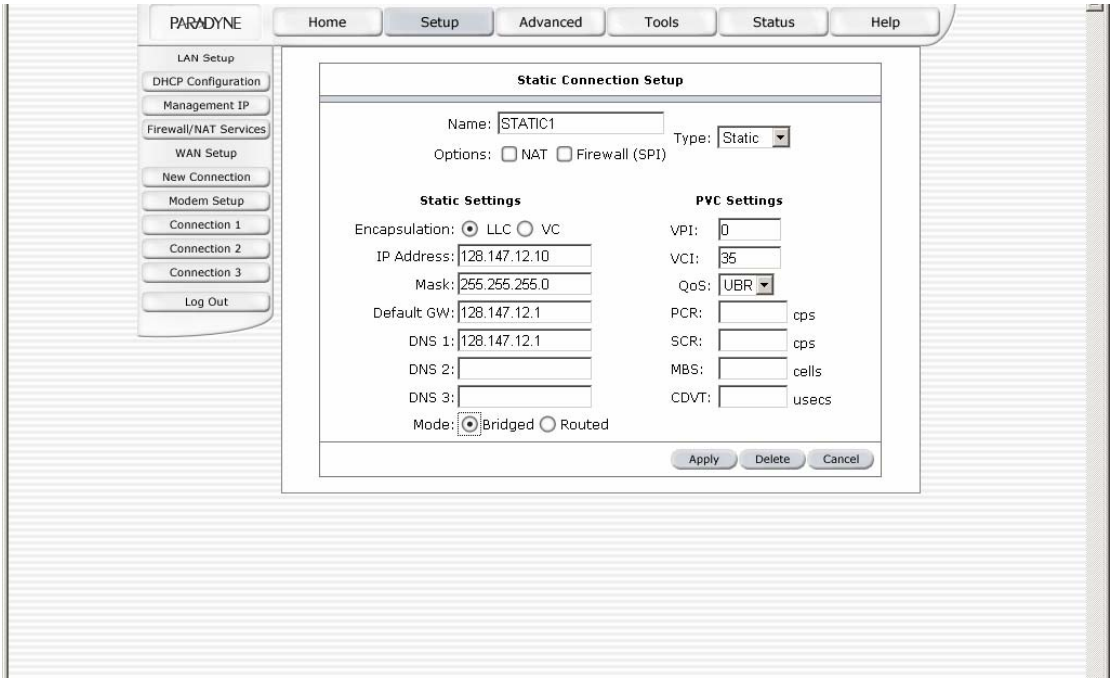



***Figure 4-8. Static IP Connection Setup***

To complete the connection you must now click the Apply button. The Apply button will temporarily save this connection. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

### 4.4.2 Modify an Existing Connection

To modify an existing connection:

1. From the Home screen, click on Setup
2. Click on the connection you want to modify. The connections are listed as Connection 1 through Connection 8.

If you delete a connection, to make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

### 4.4.3 Modem Setup

To configure the DSL modulation type:

1. From the Home screen, click on Setup.
2. Under WAN Setup, select Modem Setup. This will bring up the Modem Setup screen. Leave the default values if your ISP did not provide this information. For most all cases, this screen should not be modified.

The apply button will temporarily save these settings. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

## 4.5 Configuring the LAN

By default, your CPE has DHCP server (LAN side) enabled. If you already have a DHCP server running on your network, you *must* disable one of the two DHCP servers; if you plug a second DHCP server into the network, you will experience network errors and the network will not function normally.

### 4.5.1 Enable/Disable DHCP

To enable or disable DHCP:

1. From the Home screen, click on Setup.
2. Under LAN Setup, select DHCP Configuration. This will bring up the screen shown in Figure 4-10.
3. Specify a Start IP address. The Start IP Address is where the DHCP server starts issuing IP addresses. This value must be greater than the modem's IP address value. For example, if the modem's IP address is 192.168.1.1 (the default) than the Start IP address must be 192.168.1. 2 or higher.
4. Specify an End IP address. The End IP Address is the last address the DHCP server can issue. The ending address cannot exceed a subnet limit of 254. The maximum IP address for a modem using the default address is 192.168.1.254. If the DHCP server runs out of DHCP addresses, users will not get access to network resources.
5. Specify a Lease Time. The Lease Time is the amount of time a network user will be allowed connection to the Router with their current dynamic IP address. The amount of time is in units of seconds; the default value is 3600 seconds (1 hour).

Note: If you change the start or end values, make sure the values are still within the same subnet as the modem's IP address. For example, if the modem's IP address is 192.168.1.1 (the default), and you change the DHCP Start and End IP addresses to be 192.128.1.2 and 192.128.1.100, you will not be able to communicate with the modem if your PC has DHCP enabled.

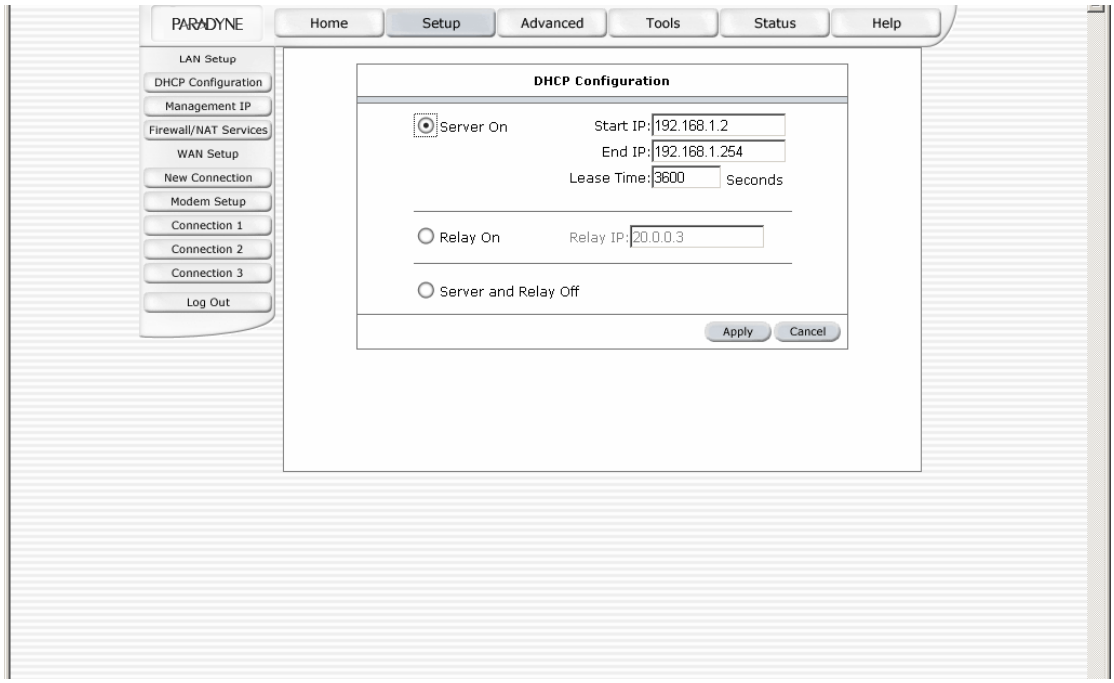



***Figure 4-10. DHCP Server Configuration***

In addition to the DHCP server feature, the modem supports the DHCP relay function. When the modem is configured as DHCP server, it assigns the IP addresses to the LAN clients. When the modem is configured as DHCP relay, it is responsible for forwarding the requests and responses negotiating between the DHCP clients and the server.

If the DHCP server and relay are turned off, you must configure the IP address, subnet mask and DNS settings of every computer on your network. Do not assign the same IP address to more than one computer. Your modem must be on the same subnet as the computers.

The Apply button will temporarily save these settings. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

## 4.5.2 Changing the Modem's IP address

To can change the modem's IP address:

1. From the Home screen, click Setup.
2. Under LAN Setup, select Management. This will bring up the screen shown in Figure 4-12.

### 4.5.2.1 Static IP address assignment

Your modem's default IP address and subnet mask are 192.168.1.1 and 255.255.255.0, respectively. This subnet mask allows the modem to support 254 users. Since the DHCP server issues a maximum of 255 addresses, there is not much advantage to changing the subnet mask to increase the number of addresses. Further, remember that if you change your modems' IP address and you have DHCP enabled, the DHCP configuration must reside within the same subnet.

The default gateway is the routing device used to forward all traffic that is not addressed to a station within the local subnet. Your ISP will provide you with the default gateway address. Figure 4-12 shows a default gateway address of 10.247.16.1 because this was the default gateway defined when the CLIP connection was configured.

The Hostname can be any alphanumeric word beginning with a letter and containing no spaces. The domain name is used to in conjunction with the host name to uniquely identify the modem.

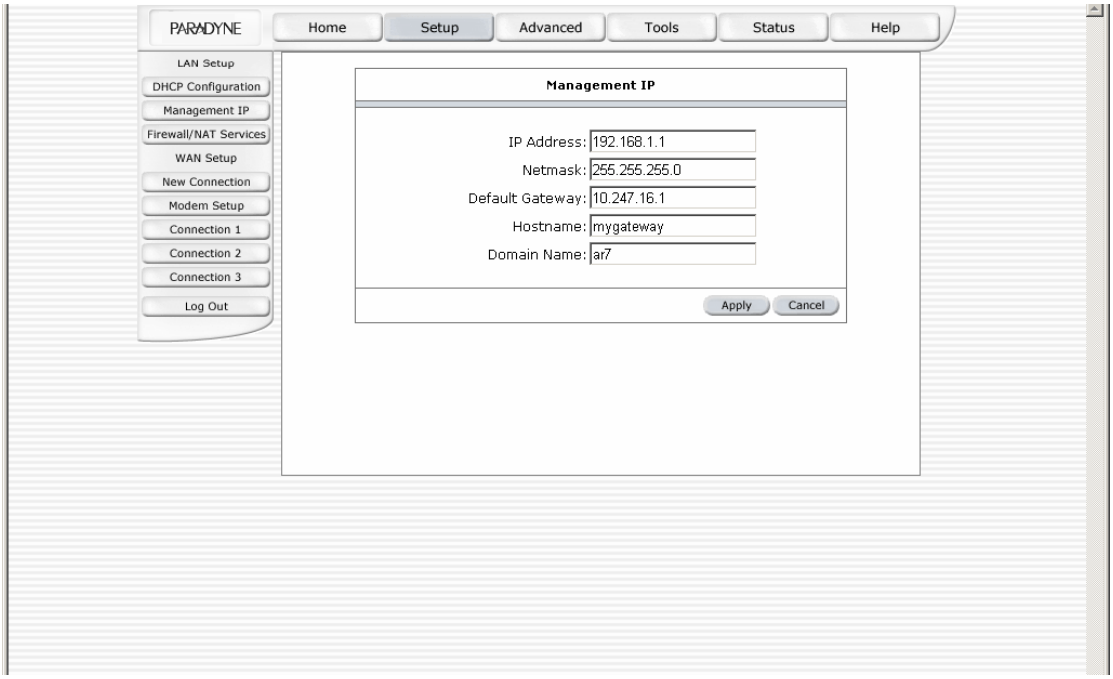



***Figure 4-12. Management IP Address***

The Apply button will temporarily save these settings. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

## 4.5.3 Firewall/NAT Services

To enable or disable Firewall and NAT:

1. From the Home screen, click Setup.
2. Under LAN Setup, select Firewall/NAT Services. By unselecting the Enable Firewall and NAT Services button the firewall and NAT services is disabled for all WAN connections. Enabling Firewall NAT does not automatically apply it to connections.

The Apply button will temporarily save this setting. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

## 4.6 Advanced

The CPE supports a host of advanced features. For basic router functionality, you don't need to utilize these advanced features. The features help with routing, security, port configuration, and plug and play capability.

### 4.6.1 UpnP

UPnP NAT and Firewall Traversal allow traffic to pass through the modem for applications using the UPnP protocol. This feature requires one active DSL connection. In the presence of multiple DSL connections, select the one over which the incoming traffic will be present, such as the default Internet connection.

To enable UPnP you must first have a WAN connection configured. Once a WAN connection is configured:

1. From the Home screen, click Advanced and under Advanced, select UPnP. This will bring up the screen shown in Figure 4-13.
2. Enable UPnP and then select which connection will utilize UPnP. In Figure 4-13, the PPPoA connection is enabled.

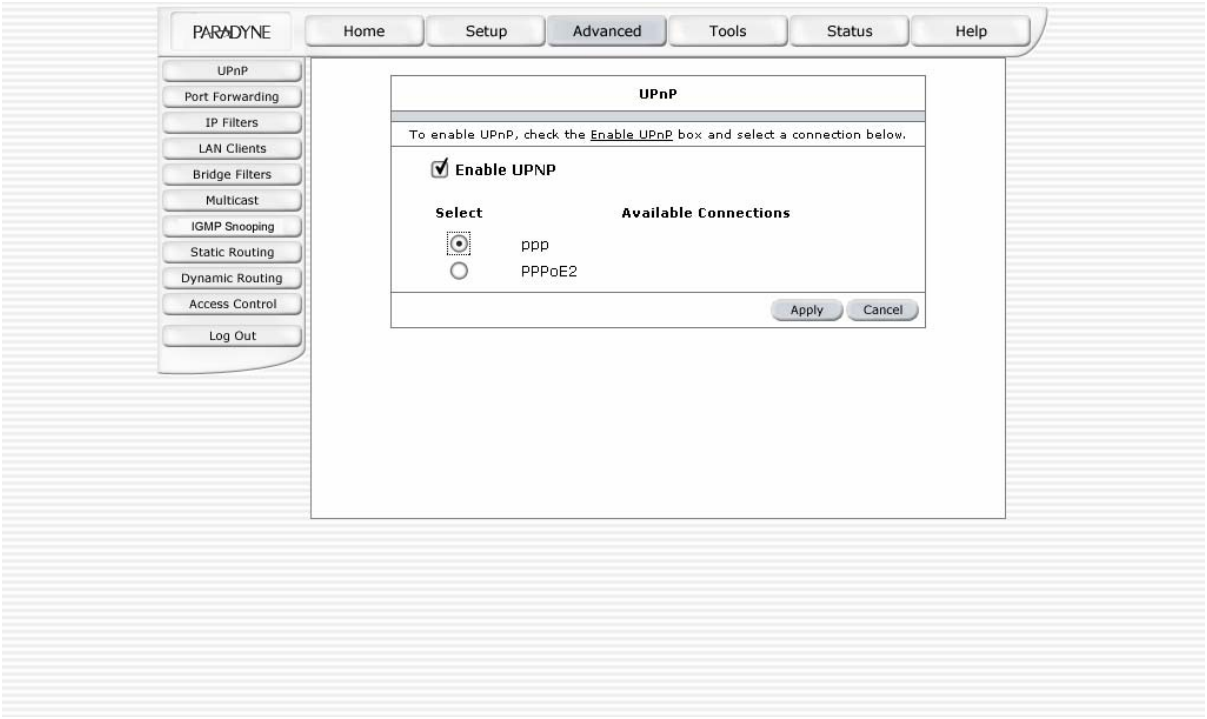



***Figure 4-13. UPnP***

The Apply button will temporarily save these settings. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

### 4.6.2 Port Forwarding

Using the Port Forwarding page you can provide local services (such as web hosting) for people on the Internet. When users send this type of request to your network via the Internet, the router will forward those requests to the appropriate PC. Port forwarding can be used with DHCP-assigned addresses, but remember that a DHCP address is dynamic. If you were configuring a Netmeeting server, for example, you would want to assign this server a static IP address so that the IP address is not reassigned. Also remember that if an Internet user is trying to access an Internet application, they must use the WAN IP address. The port forwarding feature will translate the WAN IP address into a LAN IP address.

To configure a service, game, or other application:

1. From the Home screen, click Advanced.
2. Under Advanced, select Port Forwarding.
3. Select the computer hosting the service and add the corresponding firewall rule.
4. If you want to add a custom application, select the User category, click on New, and fill in the port, protocols and description for your application.

For example, if you want to host a Netmeeting session, from the Home screen, click Advanced and under Advanced, select Port Forwarding. First select the IP address for your Netmeeting server. Next select the Audio/Video category and add Netmeeting to the Applied Rules box. To view the management rules, highlight Netmeeting and select view. This will display the preconfigured protocols and ports that Netmeeting will use. Now you can run Netmeeting from your server and call users that are on the Internet. If they know your WAN IP address, users can call you.

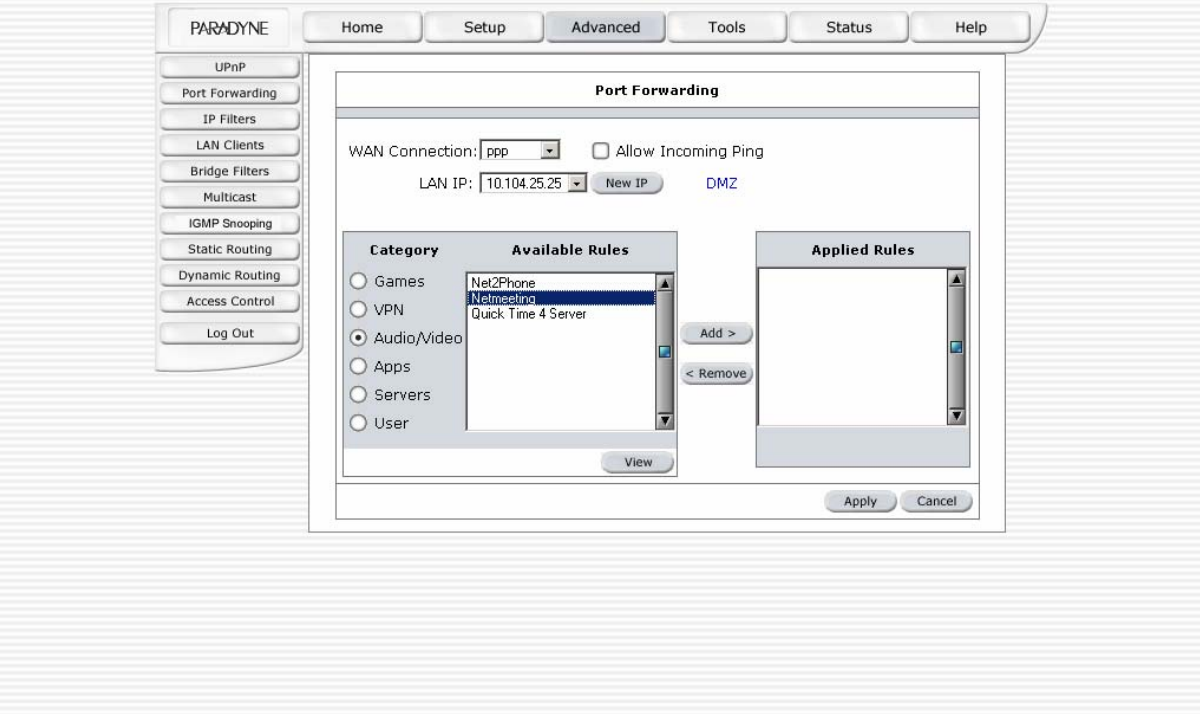



***Figure 4-14. Port Forwarding: Netmeeting***

The Apply button will temporarily save these settings. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

### 4.6.3 Access Control

Access control allows certain PCs to access the modem after the firewall is enabled.

To enable any of the Access Control features:

1. From the Home screen, click Advanced

2. Under Advanced, select Access Control. The Access Control screen appears. All Access Control rules have precedence over rules that were added via the port-forwarding page.

The Apply button will temporarily save these settings. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

### 4.6.4 LAN clients

To add a LAN client:

1. From the Home screen, click Advanced.
2. Under Advanced, select LAN Clients. If DHCP is used, all DHCP clients are automatically assigned. If a fixed IP address server is on the LAN and you want this server to be visible via the WAN, you must add its IP address. Once the IP address has been added to you can apply Port Forwarding rules to this IP address.

The apply button will temporarily save these settings. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

### 4.6.5 Bridge Filters

The bridge filtering mechanism provides a way for the users to define rules to allow or deny frames through the bridge based on source MAC address, destination MAC address and/or frame type. When bridge filtering is enabled, each frame is examined against the defined filter rules sequentially, and when a matched is determined, the appropriate filtering action (allow or deny) is performed. The bridge filter will only examine frames from interfaces which are part of the bridge itself. Twenty filter rules are supported with bridge filtering.

To enable Bridge Filters:

1. From the Home screen, click on Advanced.
2. Under Advanced, select Bridge Filters. Figure 4-15 illustrates a typical Bridge filter configuration.

The User Interface for Bridge Filter allows the user to add, edit, and delete, as well as enable the filter rules. To add rules, define the source MAC address, destination MAC address, and frame type with the desired filtering action (allow or deny), and click on the Add button. The MAC address must be in a xx-xx-xx-xx-xx-xx format, with 00-00-00-00-00-00 or blanks meaning any address.

To edit or modify an existing filter rule, select the desired rule created previously in the Edit select box. The selected filter rule appears in the top section, as with the Add procedure. Make the desired change to the MAC address, frame type and access type, and click on Apply.

To delete a filter rules, select the filter rule entry to delete in the Delete selection box. Note that multiple deletions are possible. Once all the desired filter rules are selected for deletion, click on the Apply button. The Select All select box can also be used to delete the entire filter rule. It provides a quick method of selecting all filter rules for deletion.

The Enable Bridge Filters button allows you to enable or disable bridge filtering. It can be set or unset during any add, edit, or delete operation. It can also be set or unset independently by pressing the Apply button.

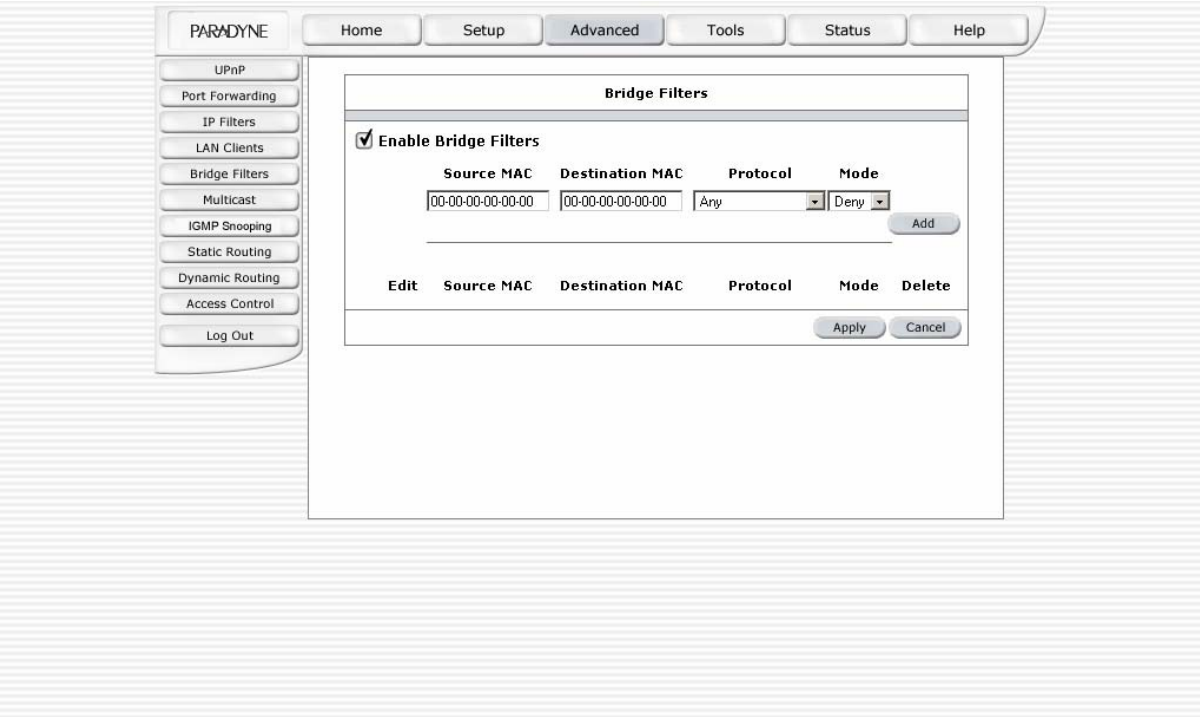



***Figure 4-15. Bridge Filters***

Note: The bridge filter table contains three hidden rules. These rules are entered automatically by the system to ensure that you don't lock yourself out of the system. The first rule allows all ARP frames through the system. The second rule allows all IPv4 frames with the destination MAC address of the modem to go through. The third rule allows all IPv4 frames with the source MAC address of the modem to go through.

The Apply button will temporarily save these settings. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

Note: On a windows based machine, you can find a MAC address with the ipconfig program. At a command prompt, type: **ipconfig /all**

### 4.6.6 Multicast/IGMP Snooping

This option enables the IGMP proxy, which allows NAT clients to participate in IGMP multicast groups. It should only be enabled if NAT is also enabled.

To enable Multicasting:

1. From the Home screen, click on Advanced.
2. Under Advanced, select Muliticast. Figure 4-16 illustrates a typical Multicast configuration.

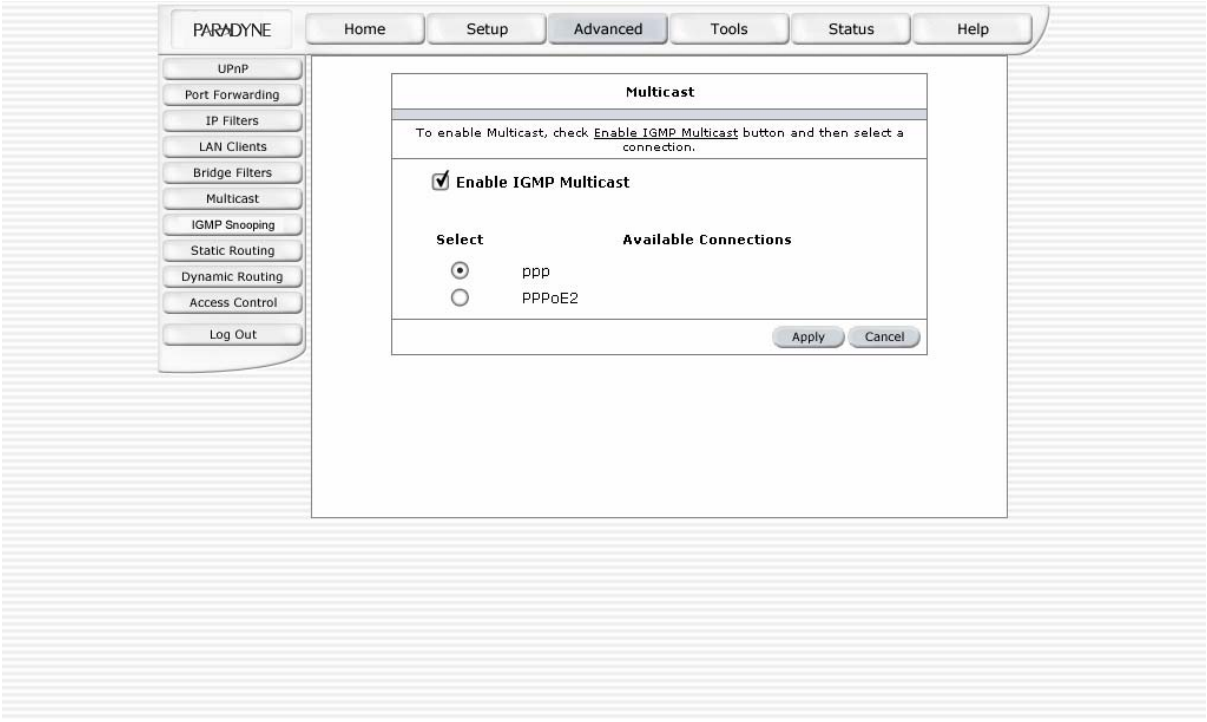



***Figure 4-16. Multicast***

The Apply button will temporarily save these settings. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

To enable IGMP Snooping , click Advanced and under Advanced, select IGMP Snooping. Figure 4-17 illustrates a typical IGMP Snooping configuration.

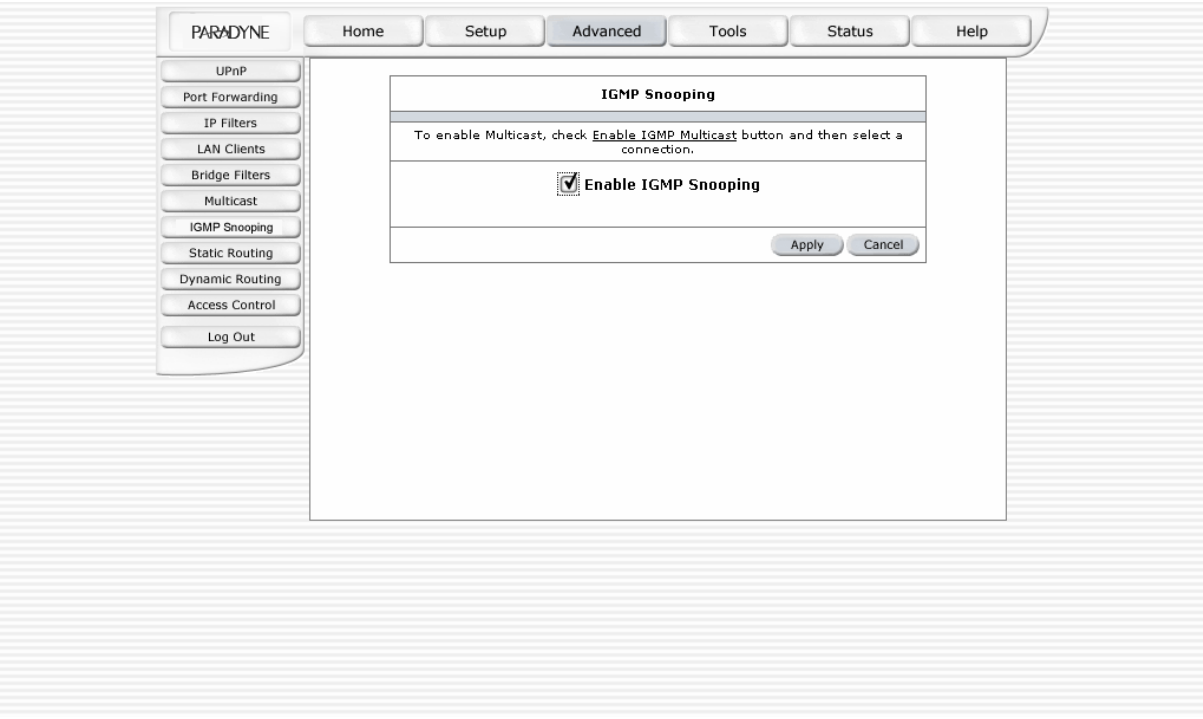



***Figure 4-17. IGMP Snooping***

### 4.6.7 Static Routing

If the modem is connected to more than one network, you may need to set up a static route between the networks. A static route is a predefined pathway that network information must travel to reach a specific host or network. You can use static routing to allow different IP domain users to access the Internet through the modem.

To enable Static Routing:

1. From the Home screen, click on Advanced.
2. Under Advanced, select Static Routing.
3. Specify the New Destination IP. This is the address of the remote LAN network or host to which you want to assign a static route. Enter the IP address of the host for which you wish to create a static route here. For a standard Class C IP domain, the network address is the first three fields of the New Destination IP, while the last field should be 0. The Subnet Mask identifies which portion of an IP address is the network portion, and which portion is the host portion. For a full Class C Subnet, the Subnet Mask is 255.255.255.0.
4. Specify the Gateway address. This is the IP address of the device that allows contact between the modem and the remote network or host.
5. Specify the Metric. This determines the maximum number of steps between network nodes that data packets will travel. A node is any device on the network (such as a router or switch).

Figure 4-18 illustrates a typical Static Route.

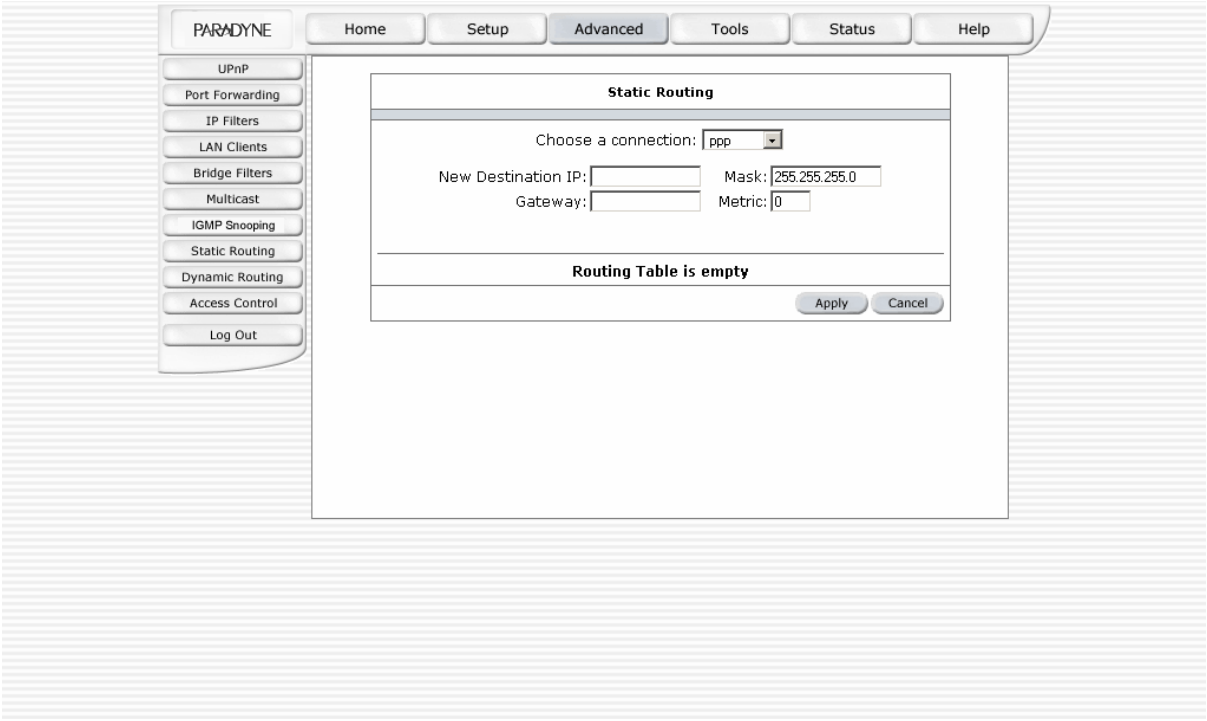



***Figure 4-18. Static Routing***

The apply button will temporarily save these settings. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

### 4.6.8 Dynamic Routing

Dynamic Routing allows the CPE to automatically adjust to physical changes in the network. The CPE, using the RIP protocol, determines the network packets' route based on the fewest number of hops between the source and the destination. The RIP protocol regularly broadcasts routing information to other routers on the network.

To enable Dynamic Routing:

1. From the Home screen, click on Advanced.
2. Under Advanced, select Dynamic Routing.
3. Specify the Protocol. The protocol is dependent upon the entire network. Most networks support Rip v1. If RIP v1 is selected, routing data will be sent in RIP v1 format. If Rip V2 is selected, routing data will be sent in RIP v2 format using subnet broadcasting. If Rip V1 Compatible is selected, routing data will be sent in RIP v2 format using multicasting.
4. Specify the Direction. This determines the direction that RIP routes will be updated. Selecting In means that the CPE will only incorporate received RIP information. Selecting Out means that the CPE will only send out RIP information. Selecting both means that the CPE will incorporate received RIP information and send out updated RIP information.

Figure 4-19 illustrates a typical Dynamic Route.

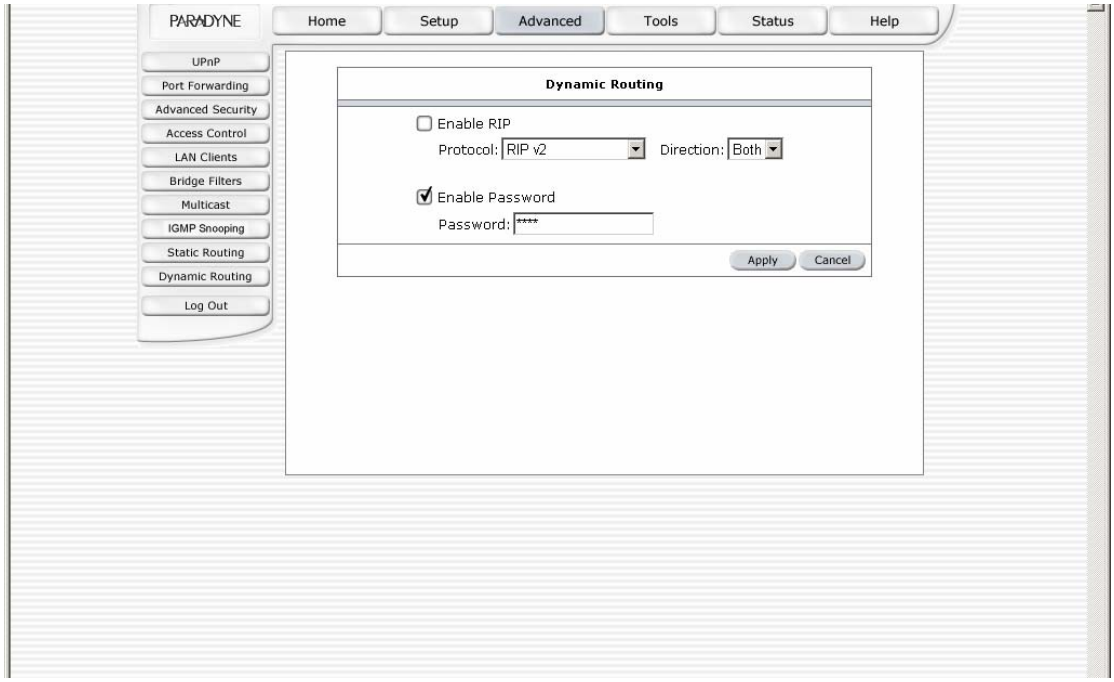



***Figure 4-19. Dynamic Routing***

The Apply button will temporarily save these settings. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

## 4.7 Tools

Your modem supports a host of customization and debugging tools.

### 4.7.1 System Commands

To make changes permanent, click on **Tools** (at the top of the page) and select **System Commands**. The following commands are used to configure the CPE:

- Save all: Press this button in order to permanently save the current configuration of the modem. If you do restart the system without saving your configuration, the CPE will revert back to the previously saved configuration.
- Restart: Use this button to restart the system. If you have not saved your configurations, the modem will revert to the previously saved configuration upon restarting. Connectivity to the unit will be lost. You can reconnect after the unit reboots.
- Restore Defaults: Use this button to restore factory default configuration. Connectivity to the unit will be lost. You can reconnect after the unit reboots.

### 4.7.2 Remote Log

The remote log feature is used in conjunction with the PC tool (software provided with your modem). For PPPoE and PPPoA connections, you can select **debug** if you want to log the connection information. This is helpful when trying to debug connection problems.

The remote log feature forwards all logged information to the remote PC. The type of information forwarded to the remote PC depends upon the log level. Each log message is assigned a severity level, which indicates how seriously the triggering event affects router functions. When you configure logging, you must specify a severity level for each facility. Messages that belong to the facility and are rated at that level or higher are logged to the destination

Table 4-1 defines the different severity levels.

**Table 4-1. Severity Level**

| Severity Level | Description |
|---|---|
| panic | System panic or other condition that causes the router to stop functioning. |
| alert | Conditions that require immediate correction, such as a corrupted system database. |
| critical | Critical conditions, such as hard drive errors. |
| error | Error conditions that generally have less serious consequences than errors in the emergency, alert, and critical levels. |
| warning | Conditions that warrant monitoring. |
| notice | Conditions that are not errors but might warrant special handling. |
| info | Events or non-error conditions of interest. |
| debug | Software debugging messages. Specify this level only when so directed by a technical support representative. |

To forward logging information, click on **Tools** (at the top of the page) and select **Remote Log**.

### 4.7.3 User Management

To change your modem's username and password:

1. From the Home screen, under the tools menu, click on User Management.
2. Change the login name and password.
3. If desired, you can change the idle timeout from this screen. The idle timeout determines after how many minutes of inactivity the web interface is logged off.

The Apply button will temporarily save these settings. To make the change permanent, click on **Tools** (at the top of the page) and select **System Commands**. At the System Commands page, click on **Save All**.

If you forget your password, you can press and hold the reset to factory defaults button for 10 seconds. The modem will be reset to its factory default configuration and all custom configurations will be lost.

### 4.7.4 Update Gateway

You can remotely upgrade the modem's firmware from the web interface. The firmware consists of two images: the kernel (operating system) and the file system.

To upgrade the firmware:

1. From the Home screen, under the Tools title, click on Update Gateway. This invokes the screen shown in Figure 4-20.
2. Click on Browse, and find the firmware file to download. Make sure this is the correct file.
3. Click on upgrade firmware (as shown in Figure 4-20). Once the upgrade is complete the CPE will reboot. You will need to log back onto the CPE after the firmware upgrade is complete.

The firmware upgrade should take less that 5 minutes to complete. If it takes longer than 5 minutes, something has gone wrong.

**Note: Do not remove power from the CPE during the firmware upgrade procedure.**

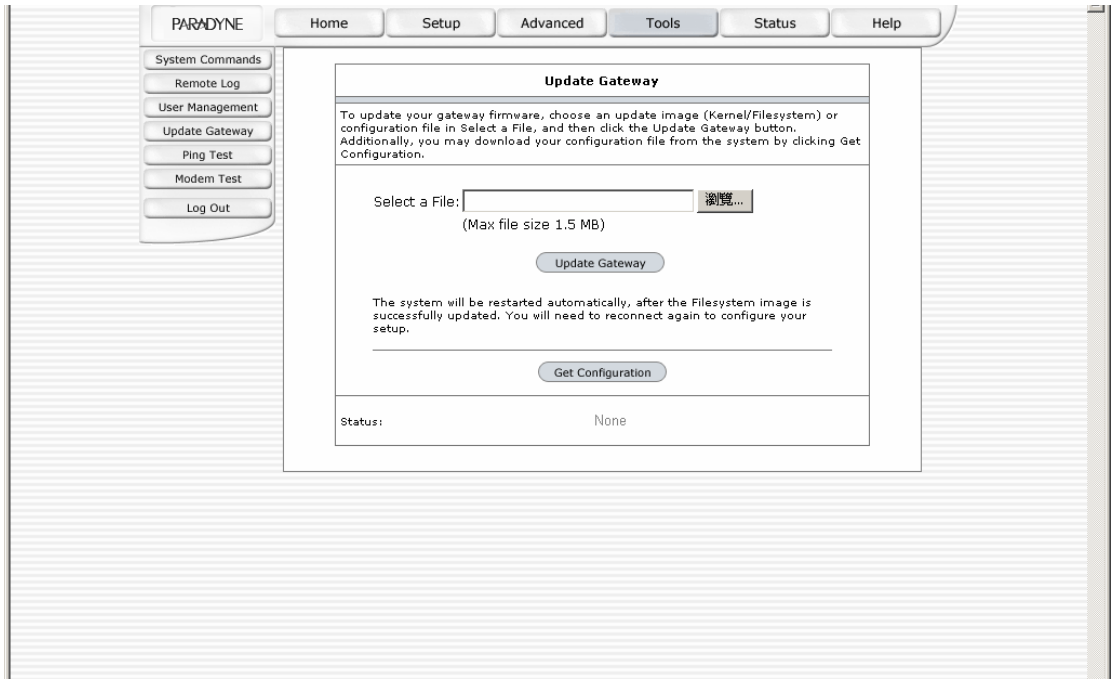

PARADYNE
Home
Setup
Advanced
Tools
Status
Help
System Commands
Remote Log
User Management
Update Gateway
Ping Test
Modem Test
Log Out
Update Gateway
To update your gateway firmware, choose an update image (Kernel/Filesystem) or configuration file in Select a File, and then click the Update Gateway button. Additionally, you may download your configuration file from the system by clicking Get Configuration.
Select a File:
瀏覽...
(Max file size 1.5 MB)
Update Gateway
The system will be restarted automatically, after the Filesystem image is successfully updated. You will need to reconnect again to configure your setup.
Get Configuration
Status:
None

***Figure 4-20. Update Gateway***

### 4.7.5 Ping Test

Once you have your modem configured, it is a good idea to make sure you can ping the network.

To run a ping test:

1. From the Home screen, under the Tools title, click on Ping Test.
2. Type the target address that you want to ping. If you have your PC connected to the modem via the default DHCP configuration, you should be able to Ping the network address 192.168.1.2. If your ISP has provided their server address you can try to ping that address. If the pings for both the WAN and the LAN side are successful, and you have the proper protocols configured, you should be able to access the Internet.

By default when you select ping test, the modem will ping itself three times. In Figure 4-21, the modem passed the Ping Test; this basically means that the TCP/IP protocol is up and running. If this first test does not pass, the TCP/IP protocol is not loaded for some reason; you should restart the modem.

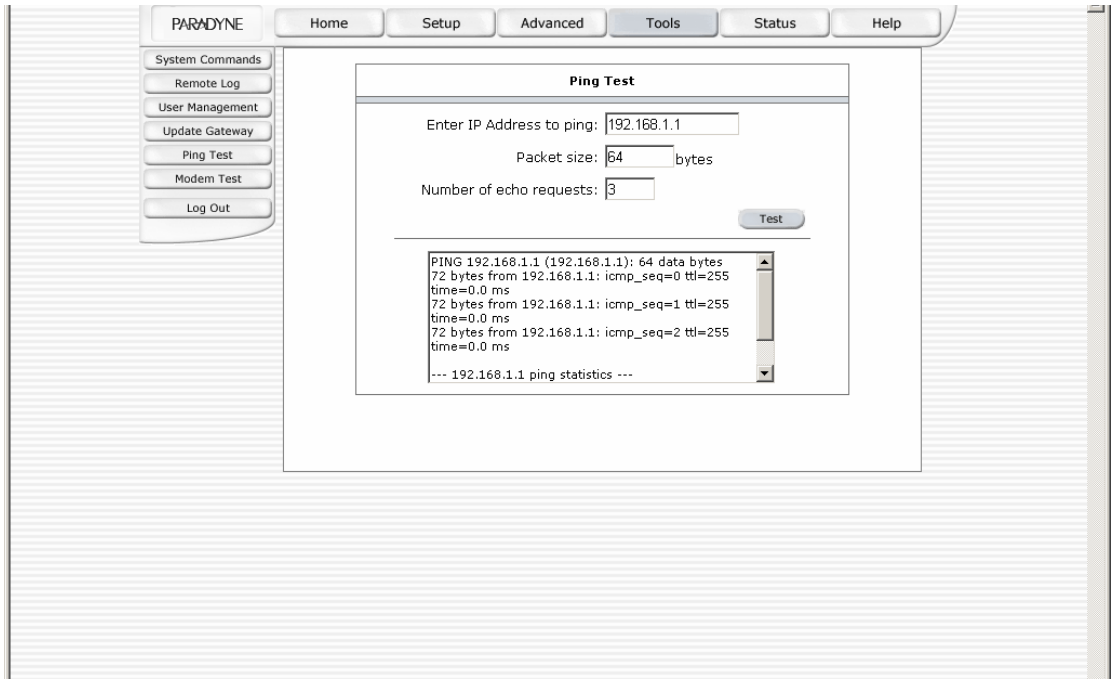



***Figure 4-21. Ping Test***

### 4.7.6 Modem Test

The Modem Test is used to check whether your Modem is properly connected to the WAN Network. This test may take a few seconds to complete. To perform the test, select your connection from the list and press the Test button. Before running this test, make sure you have a valid DSL link; if the DSL link is not connected, this test will always fail.

Also, the DSLAM must support this feature. Not all DSLAMs have F4 and F5 support.

## 4.8 Status

The Status section allows you to view the Status/Statistics of different connections and interfaces.

### 4.8.1 Network Statistics

Select to view the Statistics of different interfaces: Ethernet, USB, and DSL.

### 4.8.2 Connection Status

Select to view the Status of different connections.

### 4.8.3 DHCP Clients

Select to view the list of DHCP clients.

### 4.8.4 Modem Status

Select to view the Status and Statistics of your broadband (DSL) connection.

### 4.8.5 Product Information

You can display the modem's driver and run-time information.

To view product information:

From the Home screen, under the Status title, click on Product Information. Figure 4-22 illustrates the typical product information.

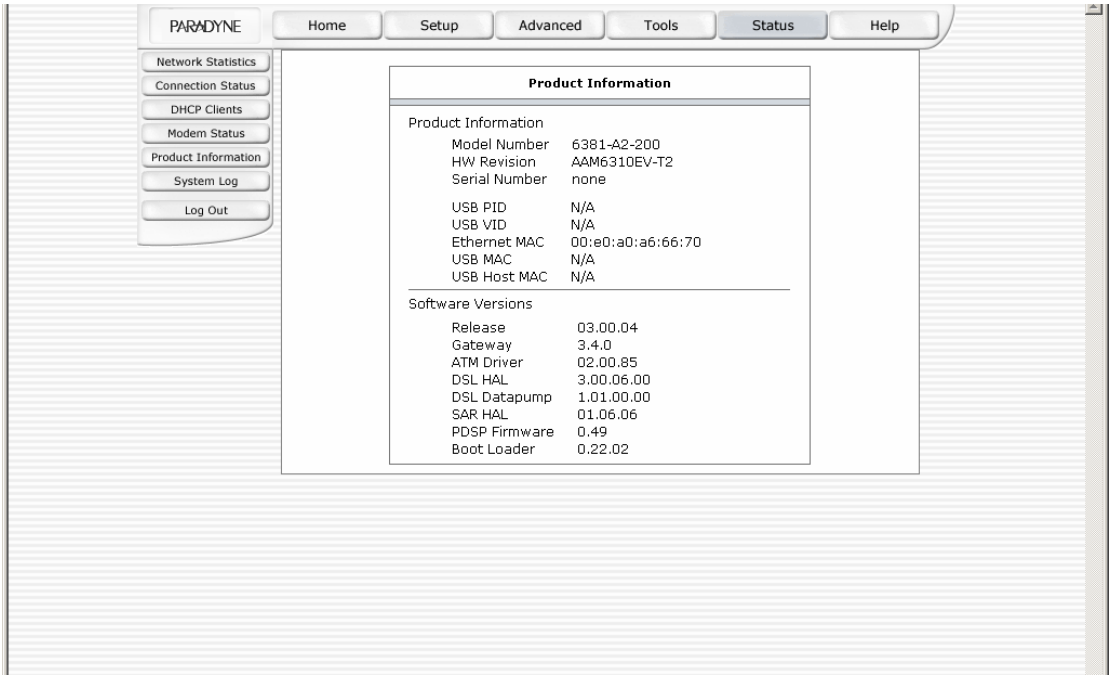



***Figure 4-22. Product Information***

### 4.8.6 System Log

You can display the modem's log by going to the Home screen, then clicking on System Log under the Status title. From here you can view all logged information. Depending upon the severity level, this logged information will generate log reports to a remote host (if remote logging is enabled).

# 5 Troubleshooting

Below is a list of commonly asked questions. Before calling technical support, please look through these issues to see if they help solve your problem.

## 5.1 The modem is not functional

1. Check to see that the power LED is green and than the network cables are installed correctly. Refer to the quick start guide for more details.
2. Check to see that the LAN and WAN LEDs are green.
3. Check to see that the DSL LED is green.
4. Make sure you are not connecting the USB and the Ethernet port to the same PC at the same time.
5. Check the settings on your PC. Again, refer to the quick start guide for more details
6. Check the CPE's settings.
7. From your PC, can you ping the modem? Assuming that the modem has DHCP enabled and your PC is on the same subnet as the modem, you should be able to ping the modem.
8. Can you ping the WAN? Your ISP should have provided the IP address of their server. If you can ping the modem and your protocols are configured correctly, you should be able to ping the ISP's network. If you cannot ping the ISP's network, make sure you are using the correct protocols with the correct VPI/VCI values.
9. Make sure NAT is enabled if you are using private addresses on the LAN ports.

## 5.2 I can't connect to the modem.

1. Check to see that the power LED is green and that the network cables are installed correctly.
2. Make sure you are not connecting the USB and the Ethernet port to the same PC at the same time.
3. Make sure that your PC and the modem are on the same network segment. The modem's default IP address is 192.168.1.1. If you are running a Windows-based PC, type **ipconfig /all** (or **winipcfg /all** on Windows 95, 98, or ME) at a command prompt to determine the IP address of your network adapter. Make sure that it is within the same 192.168.1.x subnet. Your PC's subnet mask must match the modem's subnet mask. The modem has a default subnet mask of 255.255.255.0.
4. Make sure NAT is enabled if you are using private addresses on the LAN ports.

## 5.3 The LEDs blink in a sequential pattern.

This typically means that either the kernel or flash file system is corrupted. Notify your service representative.

## 5.4 The DSL Link LED continues to blink but does not go solid

This means that the DSL line is trying to train but for some reason it cannot establish a valid connection. The main cause of this is that you are too far away from the central office. Contact your DSL service provider for further assistance.

## 5.5 The DSL Link LED is always off

1. Make sure you have DSL service. You should receive notification from your ISP that DSL service is installed. You can usually tell if the service is installed by listening to the phone line: you will hear some high-pitched noise. If you do not hear high-pitched noise, contact your ISP.
2. Verify that the phone line is connected directly to the wall and to the line input on the modem. If the phone line is connected to the phone side of the modem or you have a splitter installed on the phone line, the DSL light will not come on.

# 6 Terminology

**What is a firewall?**
A firewall is protection between the Internet and your local network. It acts as the firewall in your car does, protecting the interior of the car from the engine. Your car's firewall has very small opening that allow desired connections from the engine into the cabin (gas pedal connection, etc), but if something happens to your engine, you are protected.

The firewall in the router is very similar. Only the connections that you allow are passed through the firewall. These connections normally originate from the local network, such as users web browsing, checking e-mail, downloading files, and playing games. However, you can allow incoming connections so that you can run programs like a web server.

**What is NAT?**
NAT stands for Network Address Translation. Another name for it is Connection Sharing. What does this mean? Your ISP provides you with a single network address to access the Internet with. However, you may have several machines on your local network that want to access the Internet at the same time. The router provides NAT functionality that converts your local network addresses to the single network address provided by your ISP. It keeps track of all these connections and makes sure that the correct information gets to the correct local machine. Occasionally, there are certain programs that don't work well through NAT. Some games and other specialty applications have a bit of trouble. The router contains special functionality to handle the vast majority of these troublesome programs and games. NAT does cause problems when you want to run a server. See the DMZ section below.

**What is a DMZ?**
DMZ really stands for Demilitarized Zone. It is a way of separating part of your local network so that is more open to the Internet. Suppose that you want to run a web server, or a game server. Normal servers like these are blocked from working by the NAT functionality. The solution is to isolate the single local computer into a DMZ. This makes the single computer look like it is directly on the Internet, and others can access this machine.

Your machine isn't really directly connected to the Internet, and it really has an internal local network address. When you provide the server's network address to others, you actually provide the address of the modem. The modem fakes the connection to your machine.

You should use the DMZ when you want to run a server that others will access from the Internet. Internal programs and servers (like print servers) should not be connected to the DMZ.

**What is a Router?**

The Internet is so large that a single network cannot handle all of the traffic and still deliver a reasonable level of service. To overcome this limitation, the network is broken down into smaller segments or subnets that can deliver good performance for the stations attached to that segment. This segmentation solves the problem of supporting a large number of stations, but introduces the problem of getting traffic from one subnet to another.

To accomplish this, devices called routers are placed between segments. If a machine wishes to contact another device on the same segment, it transmits to that station directly using a simple discovery technique. If the target station does not exist on the same segment as the source station, then the source actually has no idea how to get to the target.

One of the configuration parameters transmitted to each network device is its default gateway. This address is configured by the network administrators and it informs each personal computer or other network device where to send data if the target station does not reside on the same subnet as the source. If your machine can reach all stations on the same subnet (usually a building or a sector within a building), but cannot communicate outside of this area, it is usually because of an incorrectly configured default gateway.